

Chemical Week



Pulp and paper makers expand, modernize, diversify to snap profits slump . . . p. 23

◀ ***Purity pays biochemical bonus p. 35***

Carbon black sales race for new high, spurred by record-setting '59 rebound. . . p. 55

To hike payoff on computers, teach management to be 'computer conscious'. . p. 65

CW REPORT: Long-range planning—one job top management can't delegate . p. 78

January 9, 1960

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TOP OF THE WEEK

JANUARY 9, 1960

- ▶ **Esso will hike butyl rubber capacity**, push U.S. total to 140,000 long tons/year by '61p. 25
- ▶ **Factoring, other special financing procedures gain in CPI** as bill payments lag. Little improvement is in sightp. 39
- ▶ **Five-year test of novel electrolytic iodate process** proves principles of lab process scale-upp. 49
- ▶ **Strict German laws on food additives, pesticides**, may pinch U.S. makers of agricultural chemicalsp. 87

15 VIEWPOINT

Should cooperatives, nonprofit research institutes and associations consider paying taxes from which they are now exempt?

15 OPINION

15 MEETINGS

17 BUSINESS NEWSLETTER

23 To pull profits out of four-year slump, pulp and paper makers are pumping millions into modernization, expansion and diversification.

25 Big boost for butyl: Esso to hike capacity at Baton Rouge by 80%, bring U.S. total to 140,000 long tons/year by '61.

26 Watch for phosphate industry growth out West, as old and new producers gear for rising sales.

26 TVA cuts fertilizer output by 8%, looks for breakthrough in high-analysis liquid fertilizers, warns of possible '61-'62 electricity pinch.

31 WASHINGTON NEWSLETTER

35 RESEARCH

First approach to standards in hyper-pure biochemicals comes with new government report.

36 National Science Foundation predicts U.S. research and development expenditures will top \$12 billion in '60.

39 SALES AND DISTRIBUTION

New credit financing plans are finding favor with CPI credit managers. Reason: lagging payments.

40 Chemical purchasing men to spotlight buying of foreign chemicals at upcoming meeting.

43 PRODUCTION

New dust-collection system cuts installation, operation and maintenance costs paper processing.

49 ENGINEERING

Deepwater Chemical's electrolytic iodate process shows how operating economics dictate cell design, proves payoff in scaling up.

50 Isotope users report 10-fold savings on investments in radioactive gaging, inspection and tracing.

55 MARKETS

Carbon black sales hit record 2-billion-lbs./year mark in '59, 3% growth is expected in '60. But exports may drop.

61 TECHNOLOGY NEWSLETTER

65 ADMINISTRATION

Chemical companies find midmanagement training courses key to optimizing use of computers.

75 MARKET NEWSLETTER

78 CW REPORT

Long-range planning—the way to get the most from the growth potentials in years ahead.

87 SPECIALTIES

Strict new German food additives and pesticide law means extra problems for U.S. pesticide makers.

92 BUSINESS BENCHMARKS

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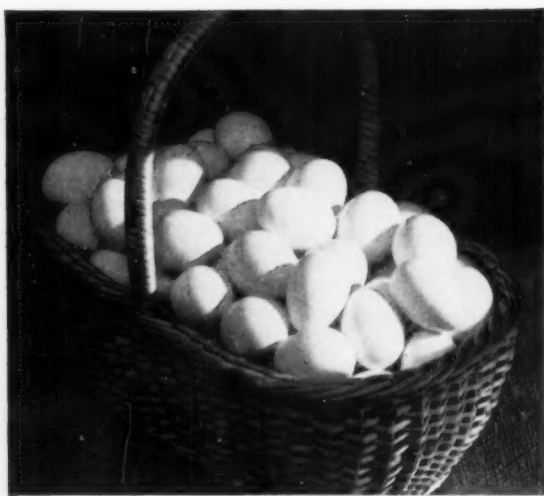


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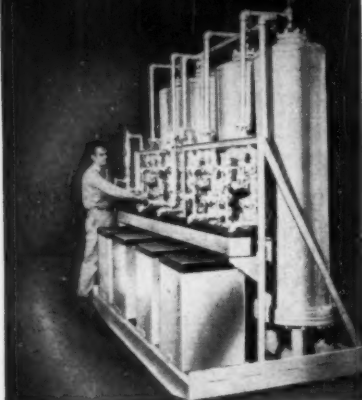
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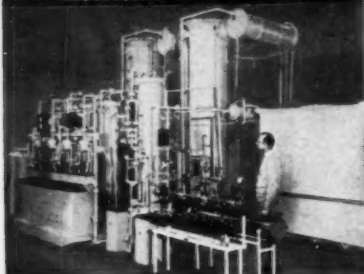
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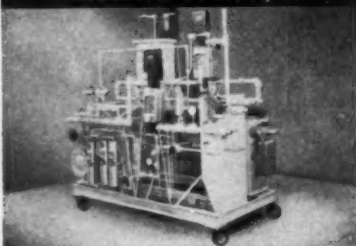
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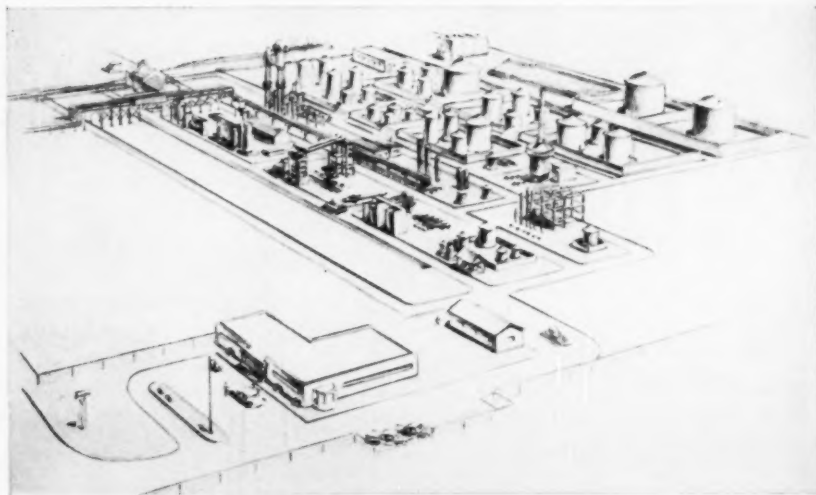
Continental Oil Company has announced that The Lummus Company has been awarded the contract to engineer and construct an Industrial Alcohols Plant at Lake Charles, Louisiana with a capacity of more than 50,000,000 lbs/yr.

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The primary raw material, ethylene, for these new products will be obtained from the ethylene plant operated at Lake Charles by Petroleum Chemicals, Inc. of which Conoco owns a 50% interest. This plant was also engineered and constructed by Lummus.

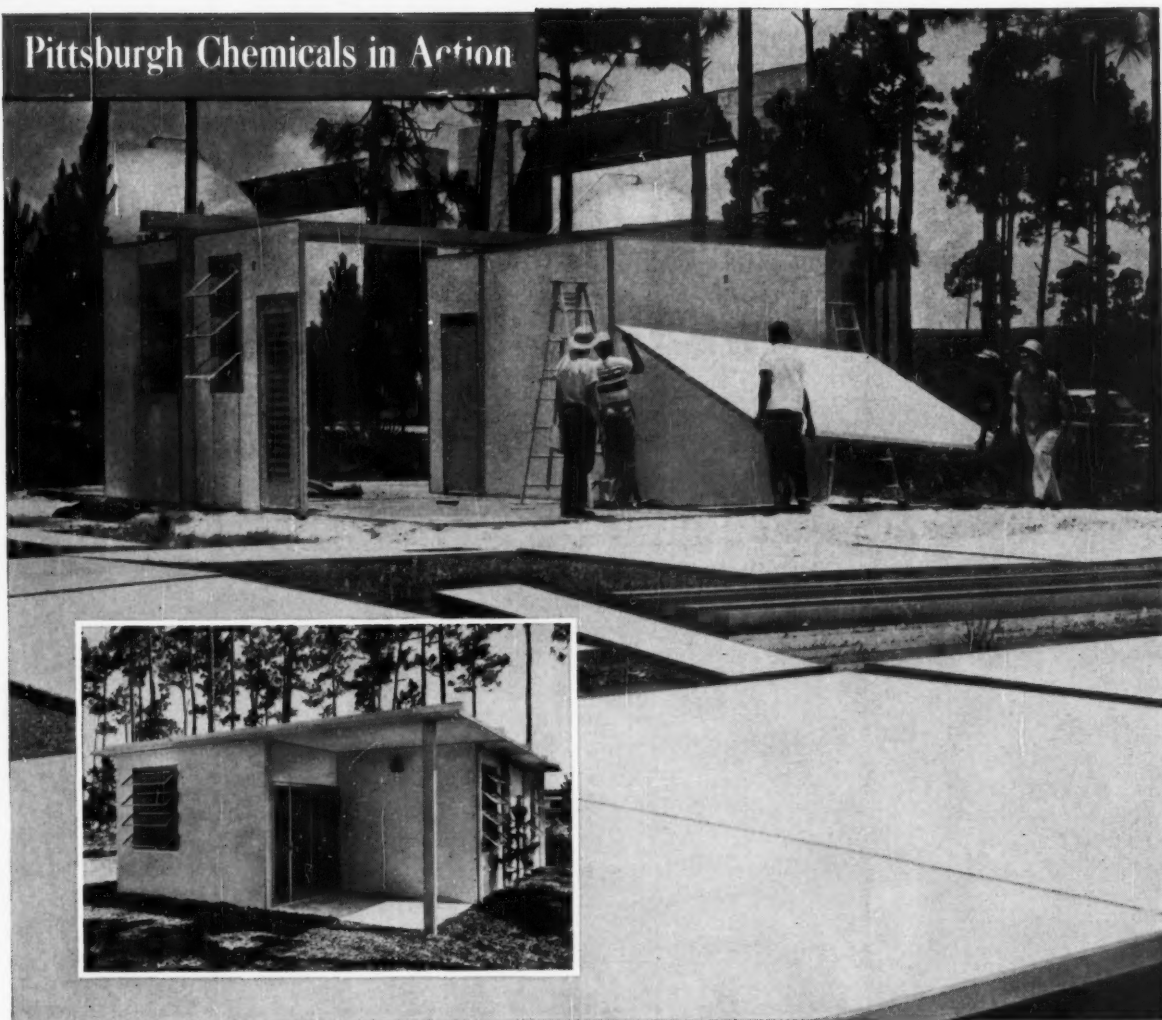
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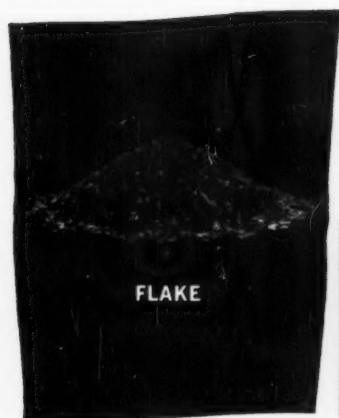
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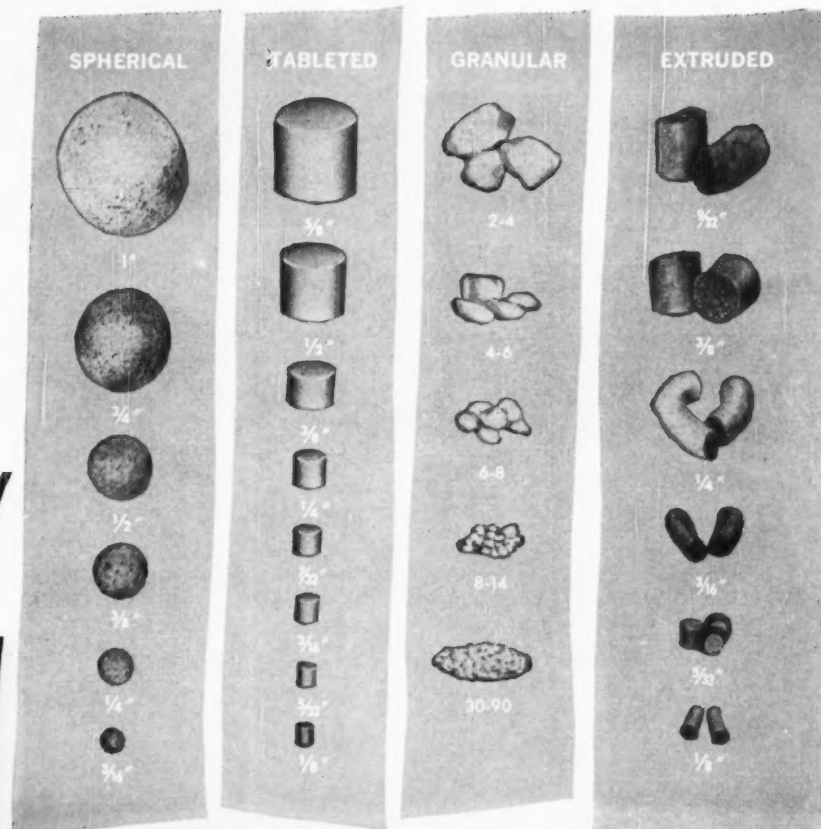


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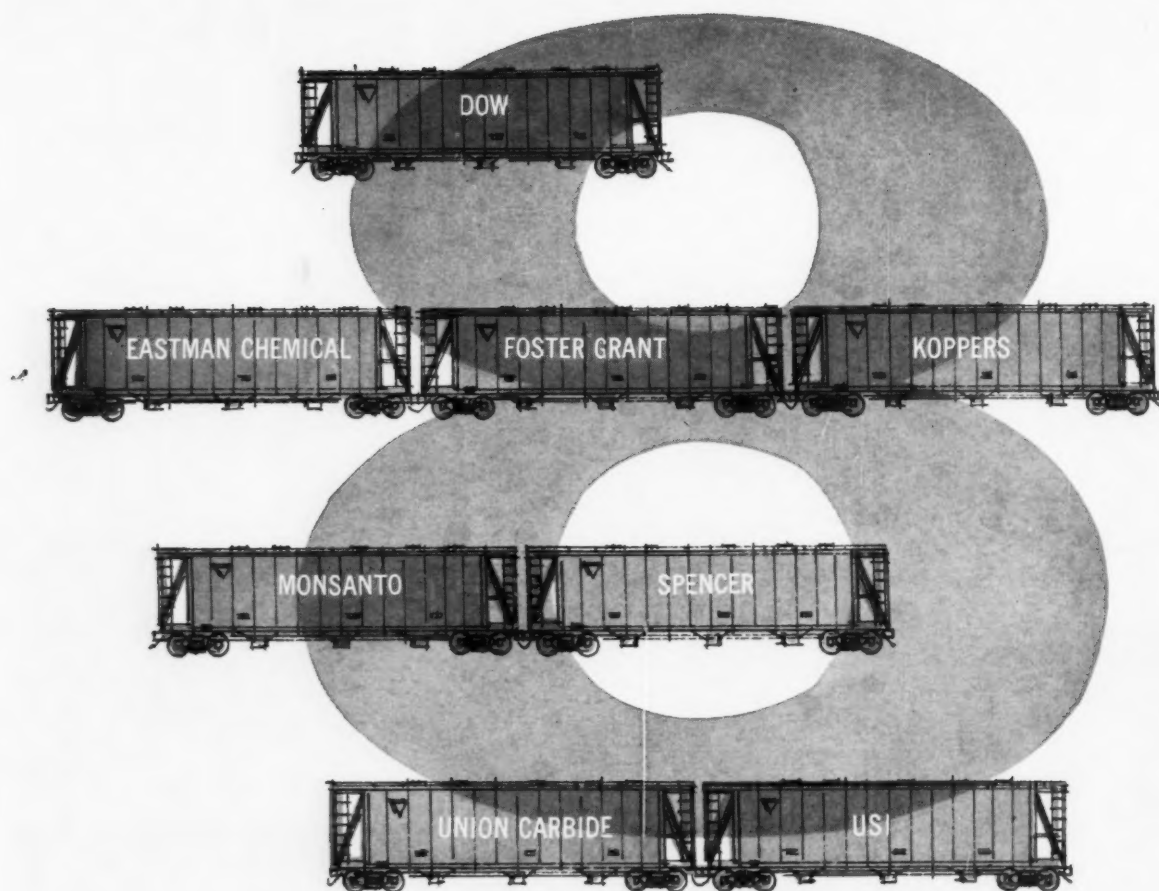
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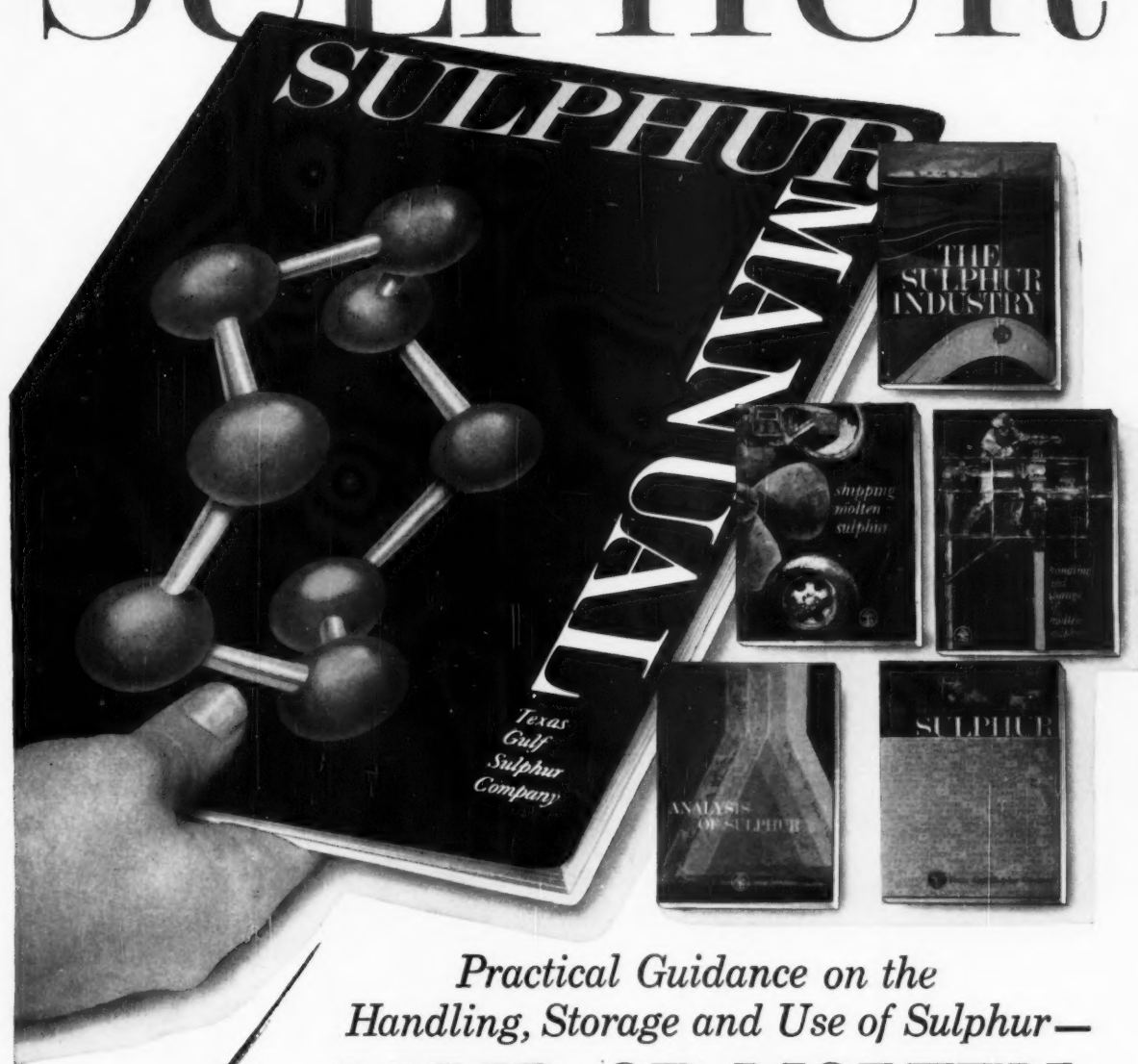
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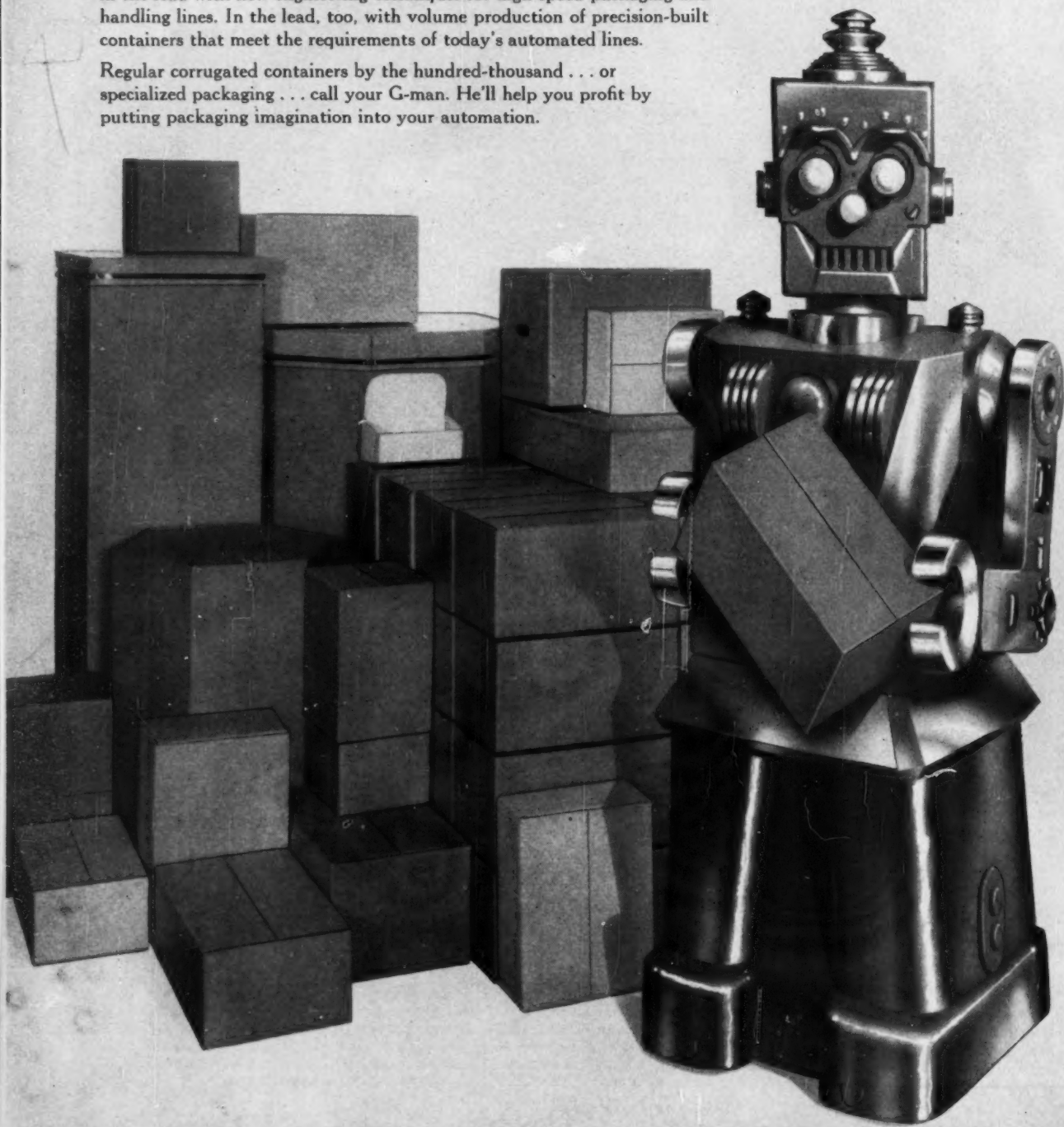
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Eliminating Drug Abuses

TO THE EDITOR: While some of the points of your editorial on drug prices (Dec. 19, '59, p. 10) are well taken, and have also been brought out in the more responsible daily newspapers, you seem to overlook one overriding fact:

As a politician—and a good one at that—Senator Kefauver seldom tries to “make” public opinion. Rather he does his best to sense it, to follow it, and wherever possible to exploit it for his own political fortunes. That, after all, is the art and skill of the politician.

The current TV spectacle and headlines would not be possible if among the masses of our people there would not be widespread opposition to the apparently entirely excessive drug prices. Sure, there is also much opposition to the fact that a single sickness and operation can wipe out 10 or even 20 years of hard-earned savings; but the American Medical Assn., as the strictest disciplined and most powerful single lobby in our nation, has so far been able to stifle all public outcry. The drugmakers do not have that political power; if worst comes to worst, we can always import our drugs from abroad, but we cannot import medical care, and therefore must stay in the good graces of our doctors (and dentists).

I am quite sure that Senator Kefauver and his hearings will not hurt any one drugmaker's balance sheet noticeably, let alone the industry's. But if he can prick them enough to eliminate some undoubtedly existing abuses, and at the same time give the public a little better understanding of the industry's problems—as he will, even though it may be against his intentions to do so—all I can say is: more power to him.

WILLIAM H. SACHS
Consultant, Chemical Specialties
Atlanta 6, Ga.

MEETINGS

Society of Plastics Engineers, 16th annual technical conference, Conrad Hilton Hotel, Chicago, Jan. 12-15, 1960.

Engineers Joint Council, annual meeting, New York, Jan. 22.

American Rocket Society, solid propellents conference, Princeton University, Princeton, N.J., Jan. 28-29.

January 9, 1960 • Chemical Week

A Dangerous Immunity

THE HEARINGS ON TAX EXEMPTIONS have produced a lot of conflicting testimony. And the members of the House Ways & Means Committee, who are conducting this broad study, have heard all sides on such questions as the need to continue tax exemptions on cooperatives, research institutes and various associations.

Another group of organizations that has benefited from roughly the same exemptions is the churches. While reading a comment on church tax exemptions by Eugene Carson Blake (stated clerk of the United Presbyterian Church, writing in the Aug. 3, '59, issue of *Christianity Today*), we were struck by the parallel that can be drawn. Where we have hereunder substituted “cooperative” for “church,” one could just as easily substitute “nonprofit organization.”

“Tax exemption for [cooperatives] must be examined in the light of the whole practice of government's granting exemption to various bodies for various purposes. In his book, ‘Taxation and the American Economy,’ William H. Anderson writes: ‘The theory behind property tax exemption is that some properties have special characteristics that make it socially advantageous to exclude them from taxation.’

“Although Anderson is concerned here with property tax exemption only, this may be applied to tax exemptions, generally.

“Tax exemptions that are proper when [cooperatives] are small, poor and weak may have highly unfortunate results to the [co-ops] and to the society when the [co-ops] have grown large and rich.

“I need not labor the point that too much tax exemption, for whatever reason, becomes a serious problem to government.

“The economic power that will increasingly be wielded by ever richer [co-ops] threatens not only to produce envy, hatred, or resentment of nonmembers but also to distort the purposes of the [co-op] members and leaders.


“I remind you that deals are being offered to [cooperatives] by which they can buy businesses and pay a management fee to the present owners, which puts both the managers and the [co-op] in an advantageous position with reference to their business competitors.

“Perhaps the above is enough to establish my main point, namely, that to continue the present [cooperative] tax exemptions indefinitely into the future will jeopardize not only the stability of government but also the program and effectiveness of the [co-ops] themselves.

“... Should the [cooperatives] examine their related business enterprises to assure themselves that their practices in these fields are not unfairly competitive with other businesses operating in the same area?”

In the case of co-ops, the operations of New York's G-L-F co-op is, of course, notable, in that the organization has chosen not to use the available tax exemptions on its commercial activities.

Dr. Blake sees the churches having more to gain than to lose, in the long run, by waiving at least part of their tax immunity. Is there a lesson for others in his reasoning?



Editor-in-Chief

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March . . . New chlor-alkali plant adds 60,000 tons/year of caustic soda capacity.

April . . . Improved specifications on nonyl phenol announced.

May . . . Increased production of specialty chemicals.

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July . . . Tightest ethylene oxide specifications in the industry announced.

September . . . Jefferson pioneers special movement of chemicals by high-speed integrated tow.

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**JEFFERSON
CHEMICALS**

Business Newsletter

CHEMICAL WEEK
January 9, 1960

This week's dramatic settlement of the steel industry dispute over wages, benefits and work rules will shape the course of business in '60 for the chemical process industries.

Probable consequences:

(1) Business activity will continue at a high level for at least the next six months, as steel users build up their inventories and sustain production rates.

(2) Recognition that in certain instances some kind of government intervention—with or without emergency legislation—may be necessary, or expedient, in collective bargaining.

(3) Wage-price inflation will continue, subject to various industries' abilities to increase productivity; many other unions (including those in the CPI) will press for gains similar to those won by the steelworkers.

(4) Supply of coal-tar chemicals—including previously scarce naphthalene—will steadily increase, but not to the point of surfeit.

(5) Spottily high prices on process equipment, other steel products, and related services. As one equipment manufacturer tells CHEMICAL WEEK: "Where manual labor plays a big part, prices are likely to go up. But where domestic and foreign competition are big factors, price increases will be hard to make."

•
Once again, petrochemicals are beating coal chemicals to a new market opportunity. This week, Continental Oil Co. (Houston, Tex.) is moving to build a 20-million-gal./year cyclohexane facility at Ponca City, Okla.—using its own benzene and hydrogen, both produced at the Ponca City refinery. Plant completion target: Sept. '60.

And on Feb. 1, Gulf Oil will be onstream with cyclohexane from a newly completed unit at its Port Arthur, Tex., refinery.

Right now, 90% of the U. S. output of this intermediate is used in nylon. It's produced mainly by Phillips, which has two plants: a 20-million-gal./year unit at Borger, Tex., and a 20-30-million-gal./year unit at Sweeney, Tex. Also producing from its own benzene: Shell, at its Wilmington, Calif., refinery (5 million gal./year).

Conoco's main customer, industry sources predict, will be Chemstrand. Du Pont's requirements are filled by Phillips and from its own 30-million-gal./year cyclohexane unit at Belle, W. Va. But both Du Pont and Chemstrand are continually expanding in nylon. Caprolactam-type nylon demand is seen increasing, and it's a good bet that more oil producers will jump into cyclohexane via petroleum-derived benzene.

Nevertheless, producers of coal chemicals expect big growth in their markets in the next few years. Last month, U.S. Steel and Bethlehem Steel launched major expansions of capacity for coal-tar chemicals

Business Newsletter

(Continued)

(*CW Business Newsletter*, Dec. 26, '59); and now Jones & Laughlin Steel has given Allied Chemical's Wilputte Coke Oven Division a contract for construction of a \$9.5-million battery of 118 smokeless by-product coke ovens at J&L's Pittsburgh Works.

•
And more hydrocarbon chemicals will be coming from LPG sources. Latest new project: Union Oil Co. of California and Goliad Corp. (Houston) will build a jointly owned natural gas processing and liquid-recovery system in southern Louisiana. The \$12-million plan calls for an extraction plant nine miles south of Kaplan; a fractionation plant near Geismar to separate the raw liquids into various components; and an 85-mile connecting pipeline.

•
Next week, Dow Chemical will display its new auto radiator fluid—described as “the first all-year cooling-system fluid for automotive engines.” Ingredients: diethylene glycol, ethylene glycol, “balanced inhibitor systems and specially treated water (purer than distilled water).”

This blended product—to be marketed in 1-gal. cans labeled Dowgard through service stations, starting this spring—will “provide what amounts to a closed cooling system for one year,” Dow maintains, and is said to be effective in a temperature range of -40 to $+240$ F. Suggested price for a drain-inspect-refill job: \$8-12.

Producers of conventional antifreeze can be expected to ask why consumers should have to pay for the water—including additional freight costs—in Dowgard. And they'll also ask why a Miami or Los Angeles motorist should pay for enough glycol to protect against -40 F temperatures. Dow points out that “many local waters are great builders of rust and corrosion,” and adds the claim that “in Southern climates, the new fluid will maintain desirable heat transfer even in air-conditioned cars.”

Actually, the new product—culmination of Dow's efforts to move a good portion of its big glycol output one step closer to consumers (*CW Business Newsletter*, June 13, '59)—is already in use. CHEMICAL WEEK learns that Ford has been putting Dowgard in new Falcons, on an experimental basis.

•
Died last weekend: Otto Haas, 87, founder of Rohm & Haas, at his home in Villanova, Pa. Only two days earlier, he had called his company's board of directors into a special meeting and asked to be relieved of his corporate offices and duties. The board voted him the title of honorary chairman, moved up three younger men: Ralph Connor, who will continue to serve as vice-president in charge of research, to be chairman of the board; F. O. Haas to be president and chairman of the executive committee; and John C. Haas to be chairman of the board. The new president and vice-chairman are both sons of the company's founder.



Miracle of the Can:

how it changed the habits
of the world

One hundred and fifty years ago, Peter Durand, an English merchant, was granted a patent for vessels of "pottery, tin or other metals of fit materials." Thus, the miracle of the can was born. This early "tin cannister" packaged foods in sealed containers . . . and changed the habits of the world.

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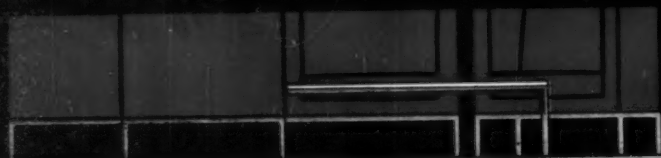
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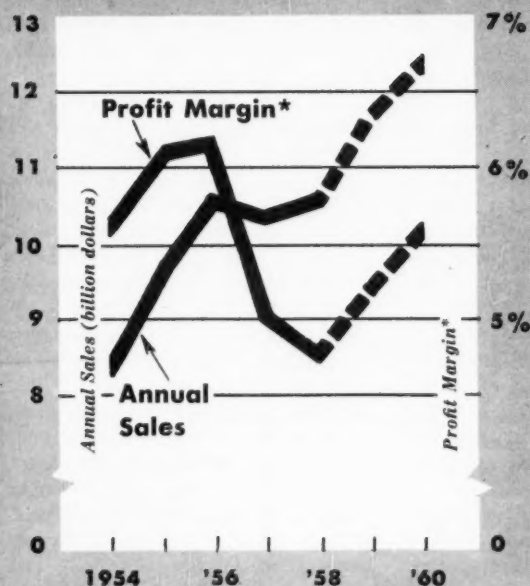
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Pulpers' Profitability Drive



*Profit margin is ratio of net profit (after taxes) to net sales. Sources: U.S. Securities & Exchange Commission, Federal Trade Commission, financial analysts' estimates.

Paper Companies' Earnings Stage a Comeback

Earnings per share of common stock, based on financial analysts' estimates.

Company	1958	'59 (est.)	'60 (est.)
Container Corp.	\$1.35	\$1.75-1.80	\$2.00
Champion Paper & Fibre	1.64	2.50	3.50
Crown Zellerbach	2.32	2.70	3.00
Hammermill Paper	2.06	2.50	3.25
International Paper	5.00	6.25-6.35	7.00-7.50
Kimberly-Clark	3.01	3.30-3.35	3.75
Mead Corp.	2.22	2.65-2.70	3.25
Scott Paper	2.75	3.00	3.25
St. Regis Paper	2.37	3.15-3.25	3.50-4.00
Union Bag-Camp Paper	2.13	2.40-2.50	3.00-3.25
S. D. Warren Co.	3.15	4.60	5.50
West Virginia Pulp and Paper	1.78	2.21	2.75-3.00

(1) Fiscal years ended March 31 of following calendar years; (2) fiscal years ended April 30 of following calendar years; (3) fiscal years ended Oct. 31.

Pulpers' Profits Turn the Corner

A determined drive to pull earnings out of a nearly four-year slump is gaining momentum in the pulp and paper industry, with major companies slated to decide this week on several multimillion-dollar plant projects.

But while papermakers seem headed for a 6% rise in sales this year, earnings would have to jump 25% for the industry to equal its '56 profitability peak (chart above).

To this end, major firms, hoping that the steel strike and other pending labor conflicts will be settled without further economic loss, have outlined an ambitious program.

Blueprint for Profit: Due for increased emphasis in '60 in the paper-making end of the business: moderni-

zation and expansion, long-range new projects, and more diversification—especially into plastics. A number of paper companies are endeavoring to beef up the plastics segment of their earnings.

And in pulping—a heavily capitalized operation in which new methods make very slow headway—paper companies will push for adoption of new processes to help lessen the industry's stream-pollution problem (CW, Jan. 2, p. 34). And a big outlay also is budgeted for better utilization of pulping wastes.

Reed Hunt, president of Crown Zellerbach, recently told members of the New York Society of Security Analysts that paper companies "see

ample opportunity to reverse the downward trend of earnings."

Expected Growth Areas: The '59 consumption growth pattern of the \$12-billion industry ran this way: container board up 3%, newsprint 7%, printing grades 10%, fine papers 12% and coarse papers 13%.

In '60, it's expected that total capacity for paperboard will go up about 800,000 tons (4½%); newsprint capacity will remain stable and other paper grades will add about 200,000 tons.

The industry operated last year at an average of 94.3% of capacity, based on averages of the American Pulp and Paper Assn.'s monthly operating figures. It is expected to run

at 95% in 1960 and at 97% in '61. This despite about 2 million tons of capacity due in that period.

Two-Year Plans: Right now, likely expansions during '60 and '61 amount to 6-7% of present U.S. pulp and paper capacity.

Some of the latest and largest:

- Southern Land, Timber and Pulp Corp. (Manchester, Ga.) reports plans for a \$40-million pulp and paper mill with an initial capacity of 400 tons/day of finished paper products. Involved: 90,000 acres of Georgia and Alabama timberland.

- Crown Zellerbach will probably make a decision this week on a proposal to add an eighth paper machine in its mill at Bogalusa, La. Bleached kraft and pulp capacity already is being expanded there, and plans have just been approved for a small lumber mill northwest of Portland, Ore. Also under discussion: the possibility of a newsprint mill in the Denver area. And CZ will spend \$35 million this year for plant improvement vs. \$23 million in '58 and \$32 million in '59.

- If Bowaters Carolina Corp. goes ahead with its projected plant additions (*CW*, Oct. 24, '59, p. 30), a \$25-million paper plant would be added to the recently completed \$38-million pulp facilities and the \$7-million hardboard plant now under construction, all at Catawba, S.C.

- Rayonier Canada Ltd. is considering expansion of its paper mill at Grays Harbor, Wash. (*CW*, Sept. 12, '59, p. 41), addition of 250-tons/day bleached sulfate pulp capacity in Woodfibre, B.C.

- Georgia-Pacific Corp. (Portland, Ore.) will expand its Toledo, Ore. plant from 325 tons to 600 tons/day. A second paper machine will be installed.

- St. Regis hopes in the '60s to blueprint plans for an additional 1-million-tons/year pulp capacity, beyond its present 1½ million tons. This step would call for invocation of cutting rights on the 1.9-million-acre Crown Timber grant in Alberta. William Adams, St. Regis president, says that foundations for the first step are just being laid in Tacoma, Wash., where the company is now adding 400 tons/day of linerboard and kraft paper capacity, to be ready in '61. The entire program would cost \$300 million at present prices. The company now operates 110 mills in the U.S. and Canada.

Today's Needs First: William Hanway, secretary of International Paper Co., puts his company's plans this way: although three new machines are being installed at various plants, the company's \$68 million in capital expenditures this year will all be aimed at improving plant efficiency as well as company operating efficiency.

Pulping operations will get more attention, too, in '60 — spurred on the one hand by state water board enforcement of stream-pollution measures, and on the other by plans for increased operating efficiency and economy.

Sulfite Process Developments: In the sulfite process used for making fine papers, acetate, rayon, nitrocellulose, carboxymethyl cellulose, the trend is toward use of soluble basic chemicals that can be recycled. Examples: ammonia, caustic soda or magnesium hydroxide substituting for a nonsoluble base such as limestone. And two-stage cooking, with injection of sulfur dioxide in the second stage (as well as pulping without any base), seems to have a distinct future.

No Sudden Shift: Pulping methods change so slowly that it will probably be about 10 years before there are any sizable shifts in volumes of chemicals consumed by this industry. Today about 400 lbs. of chemicals are used to make 1 ton of paper. At first glance, it would appear that more chemicals would be used with the switch to soluble-base pulping. But in some cases a new process could lower the outlay a company must make for processing chemicals.

Example: Rayonier is switching its sulfite pulping process from ammonia to sodium base at its Grays Harbor mill (Hoquiam, Wash.). The \$7.5-million switchover, the company says, makes it possible to reuse 85% of pulping chemicals (*CW Technology Newsletter*, Dec. 19, '59). The process is said to have a "high order of flexibility," lending itself to many pulping techniques. But if it is widely adopted, it could eventually depress chemical sales to pulp mills.

But the Magnefit process, now being adopted, replaces the calcium base with ammonia.

Liquor Recovery: In Wisconsin, where pollution has been a major hurdle, Consolidated Water Power and Paper is working with a \$750,-

000 spent liquor recovery unit at Wisconsin Rapids. It's designed to process waste liquors from neutral sulfite semichemical pulping or kraft pulping operations.

Now that pulp- and papermaking chemicals are in ample supply, there's diminishing interest in captive production. And '60 will see stepped-up research and development of chemicals obtained from pulping wastes. Tall oil from kraft liquor already has become a \$15-million/year industry.

Dimethyl sulfide is gaining in importance. Early '60 will mark the opening of Crown Zellerbach's dimethyl sulfoxide unit at Bogalusa. Dimethyl sulfoxide, an industrial solvent, is based on dimethyl sulfide. Now the company is shipping DMS from its Camas, Wash., operation, but a 10-million-lbs./year dimethyl sulfide facility is planned for Bogalusa.

Potential Profitmakers: And only a month ago it was reported that potentially profitable pulping by-products are now in advanced laboratory stages (*CW Technology Newsletter*, Dec. 19, '59). These include vanillic acid, polyester derivatives, syringaldehyde and syringic acid, hydrobenzoic acid (from hardwood), and diacetone sugars and polyols from wood carbohydrates.

But about 30% of each log is lignin. Years of research have turned up only minor outlets for the millions of tons being disposed of each year.

However, lignosulfonates' ability to form complexes with various metals has recently resulted in uses in oil well drilling fluids, and in agricultural iron deficiency sprays.

In bleaching, dyeing and finishing, the chemical industry has an equal stake with paper companies. Multi-stage bleaching with chlorine dioxide made a substantial gain in '59. New methods of continuously generating chlorine dioxide are available, and peroxide bleaching also is making significant inroads.

Pigments and dyestuff developments include: continuous coloring techniques for tissue and other newsprint grades; wider use of fluorescent dyes, luminescent pigments; optical brighteners based on aminostilbene sulfonate derivatives; new dyestuffs; and improved wet-strength resins and sizing chemicals.

FDA Trouble: But slowing the use of many new dyestuffs and other

chemical additives is the '58 amendment to the Food Additives Law. Clearance of new chemicals is a big problem for the paper industry, a hefty chunk of whose output is for food packaging. There's a scramble to bring in chemicals rated "safe" by the Food & Drug Administration—mainly in the areas of pigments and coatings. Chemical companies will have to carry the ball in this, as makers of food-packaging paper products are refusing to buy dyestuffs and chemicals that aren't cleared.

St. Regis' chief executive feels that real profit improvement must come from advances in technology and marketing. Clu-Pak—an extensible kraft made by West Virginia Pulp and Paper Co., is regarded as one such advance. Combinations of plastics and paper—e.g., minute thicknesses of polyethylene extruded on paper—are opening new doors to profits. Also significant in this regard: forming of synthetic fiber sheets with Fourdrinier machines.

A few famous plastics-paper marriages:

- St. Regis, Du Pont—St. Regis researchers, working in a Du Pont lab, built the first commercial extrusion coating equipment.

- Crown Zellerbach, Spencer Chemical—kraft paper coated with low- and medium-density polyethylene.

- International Paper Co., Union Carbide Plastics Co.—high-density polyethylene on kraft. This development, both companies say, makes possible a thinner, tougher, more abrasion-resistant coating, particularly for multiwall bags.

Also, St. Regis and Monsanto's Fome-Cor sandwich of foamed polystyrene between two sheets of kraft is finding uses in shipments of perishables ranging from poultry to flowers.

Still Going Strong: With a \$25-million stake in the plastics business, St. Regis plans further plastics expansion. And CZ produces free film (from Spencer resins) as well as precoated kraft; is said to be using various blends of resins and considering research on organic coated papers.

Direct proof of the value of diversification, according to St. Regis, is that this company's earnings during the recent recession declined only 23%, less than those of most other major companies. For St. Regis,

the price upsets in multiwalls and kraft paper and the drop-off in plywood and lumber were offset by improving performance of printing paper, glassine and greaseproof paper, corrugated containers, folding boxes, breadwrap and plastics.

Export Challenge Seen: Exports will be playing an increasingly important role in the industry's earnings, according to the St. Regis president. Mainly newsprint and pulp are exported; the total amounted to only about 2% of U.S. production in '59, or \$8 million in sales. Adams feels the U.S. can help bring Western nations' paper supply to needed levels. But International Paper's Hanway sees no easy road here. He sees a likelihood that demand for paper and paper products outside North America will be increasingly met by new foreign capacity.

"Scandinavian countries," he says, "are expanding rapidly, and Russia is reported to be doubling its pulp-making capacity."

Although western Europe, outside of Scandinavia, will continue to be an ever bigger importer of wood cellulose, North American mills are now expected to have to compete hard to hold and to increase their share of this growing market. U.S. exports also are now coming up against the new restrictions imposed by individual foreign countries that are members of blocs or groups such as the Common Market and "Outer Seven."

Result: increasing participation by U.S. companies in the Common Market area. For example, St. Regis reports that in 1959 it received income on technical aid and royalties from all parts of western Europe, South Africa, South America and the Orient; it has five wholly owned plants in Belgium, Brazil and Argentina, six plants in South Africa, and others in Australia, Brazil and Colombia.

And CZ established an International Division last year. So far, the company has made minor moves in Central America in the packaging field, says it has other proposals under consideration.

So, at home and abroad, the big profit push is on. But it's clear that factors beyond their control—e.g., another long steel strike, a big dose of inflation, or a sudden downturn in the economy—could undercut pulp- and papermakers' efforts.

Boost for Butyl

The butyl rubber market, which was almost eliminated by the advent of tubeless tires in '54, has been making some long strides on the comeback trail. The outlook has brightened enough to prompt Standard Oil of New Jersey—the only butyl producer in the U.S.—to boost output by 38,000 long tons/year.

Standard's butyl output zoomed to 97,500 long tons in '59, compared with the 52,241 tons produced in '58, when output had dropped more than 20% from the previous year. Standard's sales last year were even greater, fed by more than 8,000 tons out of inventory.

A big hike in exports accounts for part of this boost. In '58, they rose more than 50%, to about 13,500 tons. In '59, they bounded up 55% further, to an estimated 21,000 tons.

One factor in the tight world market last year was the three-month strike of the Canadian butyl producer, Canadian Polymer Corp. And the only other butyl producer, France's Societe du Caoutchouc, had startup trouble with its 20,000-tons/year plant, which did not come onstream until March. Partly to rebuild inventories, Standard expects to be producing at or near full capacity for at least another 6-12 months.

Two-Plant Output: Standard's butyl is produced at former government plants in Baton Rouge, La. (operated by Esso Standard) and Baytown, Tex., (operated by Humble Oil & Refining). Standard rates Baton Rouge capacity at 40,500 tons, Baytown at 57,500. The new expansion and modification will be made at Baton Rouge in two stages: 20,000 tons "available" by the middle of this year, followed by 18,000 tons during the second quarter of '61. This will bring combined capacity of both plants up to more than 135,000 long tons/year, Standard says.

Actually, part of this expansion simply restores capacity put out of commission in '54 and '58. Including inactive units, the government sets Standard's present capacity at 117,500 tons.

Later this year Standard's sales arm, Enjay, plans to market latex and chlorinated butyl. Production of these new types would presumably mean cutting into output of the regular type.

Phosphate Spurt

New moves by present and prospective phosphate producers in the West this week point to the possibility that the industry may be due for more rapid growth in the West than in the South and East.

So far, the four phosphate-producing states in the West—Idaho, Montana, Utah and Wyoming—account for little more than 10% of total U.S. output. And there's no doubt that production in Florida and Tennessee is rising. For example, Monsanto Chemical and Hooker Chemical are expanding their phosphorus operations in Tennessee, and American Agricultural Chemical will have to boost its phosphate production in Florida this year to supply its \$2-million phosphorus products plant now nearing completion in New Jersey. Over-all, U.S. demand for all phosphorus materials is growing at an estimated rate of 6%/year, with most of the growth in detergent compounds and other nonfertilizer applications.

Saving on Coke: Possibly the most important recent development for the Western phosphate industry: discovery of methods to carbonize locally mined soft coal into pellets that can be used as metallurgical-grade coke in electric furnaces to produce elemental phosphorus. This is expected to be a substantial cost-cutter for Western producers, who now have to ship all their coke from the East.

Leaders in this new technique: Food Machinery and Chemical Corp.'s Mineral Products Division, which will build a \$3.5-million coking plant at Kemmerer, Wyo., to supply the carbon pellets to FMC's phosphorus facility at Pocatello, Ida.; and U.S. Fuel Co. (Salt Lake City), which has piloted a similar process and is now considering a \$2-million plant project.

Other recent happenings that have stirred speculation on phosphate industry growth in the West:

- In an auction of federal phosphate leaseholds last month, a trio of Salt Lake City businessmen were high bidders on one 2,509-acre tract, and San Francisco Chemical Corp.—owned 50-50 by Stauffer Chemical Co. and Mountain Copper Co.—picked up 2,373 acres. The phosphate ores under these lands—in the Flaming Gorge area of Daggett County,

Utah—are not expected to be developed in the near future. However, the Salt Lake City group—headed by John Morgan, Sr.—says it's carrying on discussions with two major fertilizer companies that do not have any phosphate plants in the West.

- Rocky Mountain Phosphates, Inc., has been organized at Butte, Mont., and has leased a plant to produce up to 2,000 tons/month of a defluorinated phosphate product for use as an additive in livestock and poultry feeds. Its president is B. L. Rhodes, formerly manager of International Minerals & Chemical Corp.'s Phosphate Chemicals Division. RMP expects to be in production March 1.

- Bunker Hill Co. (San Francisco) has acquired phosphate lands in western Montana to help supply the triple superphosphate plant it will build this year at Kellogg, Ida., where the company produces sulfuric acid as a by-product from its lead and zinc operations.

- J. R. Simplot Co. has completed a 400-tons/day sulfuric acid unit at its Pocatello works, has acquired operating rights on Anaconda's phosphate properties at Conda, Ida., and has converted these properties to open-cut mining operations.

- Stauffer—which recently absorbed by merger Victor Chemical Works and its A. R. Maas Division, major producers of phosphates and phosphorus compounds—has a number of phosphate projects in mind, but apparently not for immediate construction. One long-range possibility: a 60,000-kw. elemental phosphorus plant near the 700-million-ton ore body in Uintah County, Utah. San Francisco Chemical bought this phosphate deposit—on which Monsanto previously held an option—for cash earlier last year, and would have the job of developing an open-cut mine and beneficiating plant.

But there can be no decision on this project until the U.S. Bureau of Reclamation decides on price and customer-preference policies for electric energy from the Flaming Gorge Dam, which is scheduled for completion in '62. Another hitch: output would have to be transported a considerable distance to the nearest railroad.

Earlier last year, Central Farmers Fertilizer brought onstream its elemental phosphorus and phosphoric

acid plant at Georgetown Canyon, Ida.; and Monsanto completed an 11-mile access road connecting its phosphate mine and plant at Soda Springs, Ida. Then in October, FMC completed a major overhaul of its Pocatello facilities.

All these moves add up to the likelihood that the Western states will produce a steadily increasing share of all U.S. phosphate materials over the next decade.

TVA Trims Output

Tennessee Valley Authority cut by 8.6% its production of fertilizer materials for demonstration purposes in the past fiscal year, according to the agency's 26th annual report, out last week.

New directions in TVA's fertilizer program: (1) development work aimed at finding a low-cost process for making high-analysis liquid mixed fertilizers; (2) demonstration projects emphasizing fertilization of close-growing hay and pasture crops, a practice not generally accepted by farmers.

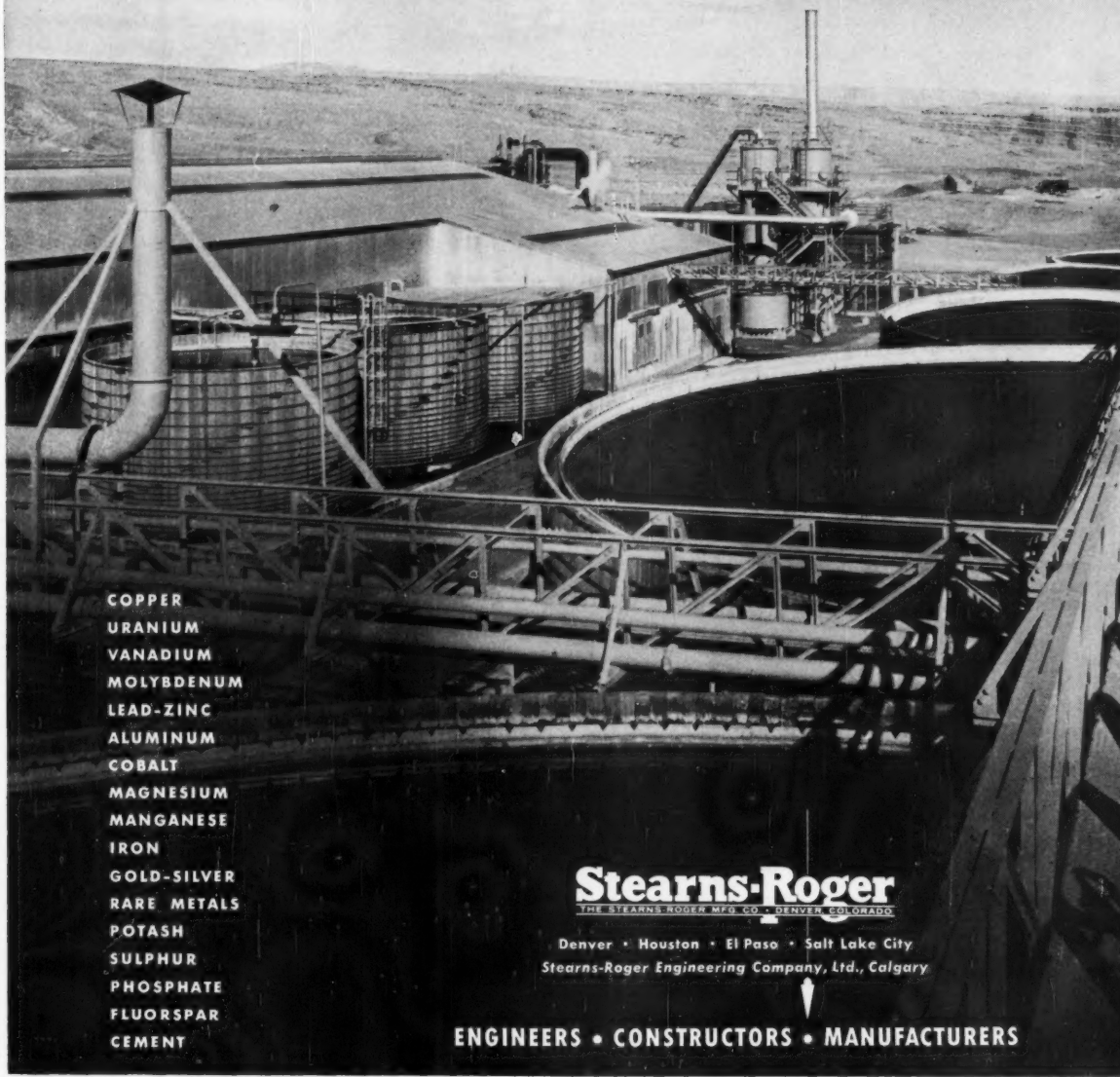
CPI companies that buy electric energy directly from TVA increased their power consumption 14.8%—an indication of the high level of business activity in fiscal '59. During the 1957-58 recession, these larger CPI plants in the TVA area used 8.36 billion kwh., paying an average of 4.21 mills/kwh. During the 1958-59 recovery, these plants took 9.52 billion kwh., and the average rate increased to 4.3 mills.

While TVA expects to have plenty of power for both industrial and residential use throughout the winter of 1960-61, it foresees a possible pinch in the following winter seasons. TVA Power Manager G. O. Wessenauer says this situation arises because the agency has not made enough money to start building all the new capacity considered desirable for future needs. Demands for power in the 1961-62 winter will be met, Wessenauer promises, "although perhaps at some added cost."

The agency is building a pilot plant to continue studies on use of commercial wet-process phosphoric acid in making high-analysis liquid and solid mixed fertilizers. TVA's Office of Chemical Engineering also is doing exploratory work on high-analysis suspension fertilizers.

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COMPANIES

Allied Chemical stockholders have voted for a two-for-one common stock split. By about Jan. 22, there will be 24 million shares outstanding with a par value of \$9 each.

Aluminium Ltd. plans to acquire Apex Smelting Co. (Chicago) in exchange for 340,000 shares of stock. Apex operates secondary smelters in Chicago, Cleveland and Los Angeles, produces foundry alloys and extrusion billets, and supplies zinc casting and magnesium alloys. Since '53, Apex has also been distributing primary alloys produced by Aluminium's principal operating subsidiary, Aluminum Co. of Canada.

Dyna-Therm Chemical Corp. (Culver City, Calif.) has issued 300,000 shares of capital stock at \$3/share.

Sonoco Products Co. (Hartsville, S.C.) has acquired Newton Paper Co. (Holyoke, Mass.) and plans to expand its facilities to produce paperboard for Sonoco's line of paper cores and other products.

General Dynamics Corp. (New York)—which has been diversifying into chemical and other nondefense businesses since its '57 merger with Liquid Carbonic—has acquired Chicago's Material Service Corp. (*CW Business Newsletter*, July 4, '59).

EXPANSION

Sulfur: Tidewater Oil Co. has started construction of its sulfur recovery and cycling plant at the New Home Smackover field in Texas. Daily capacity: 224 long tons of sulfur, 7,500 bbls. of distillate, 1,040 bbls. of propane, 550 bbls. of butane. Brown and Root is the contractor.

Carbon Bisulfide: Latest word on Stauffer's new carbon bisulfide plant: it will cost about \$5 million, will go up on a 100-acre site (purchased from Tidewater Oil Co.) at Newcastle, Del. Onstream target: Jan. '61.

Silicon Metal: Reynolds Metals plans to start construction of its first elemental silicon plant by mid-'60 (*CW Business Newsletter*, Dec. 26, '59). The 5,000-tons/year plant will go up at Reynolds' Lister Hill reduction plant (near Sheffield, Ala.). It will supply all of Reynolds' local needs (for alloying), with some output going to the company's other plants.

Glass/Plastic: Owens-Illinois Glass Co. has reportedly purchased a 95-acre site in Trafalgar, Ont. A new subsidiary, Owens-Illinois of Canada Ltd., is expected to take over title to the land and has already leased a plant in the Toronto area to produce rigid plastic containers.

Polypropylene Fiber: Dawbarn Brothers, Inc., has completed the second expansion of its synthetic fiber plant at Waynesboro, Va. It adds 50,000 sq.ft. to the plant, bringing total floor space up to 160,000 sq.ft. The new space will be devoted "almost entirely" to polypropylene fiber production for such applications as outdoor furniture, auto seat covers, and industrial fabrics.

FOREIGN

Polyester Fiber/Spain: AKU, the Dutch fiber giant, will put up a Terlenka (Terylene) polyester plant in Spain through its subsidiary, La Seda de Barcelona S. A. Imperial Chemical Industries has supplied a license.

Alkalis/South Korea: Orient Chemical Co. has won a loan from the U.S. Development Loan Fund to build a \$5.6-million alkali plant in South Korea. Capacity: 37,030 tons/year of soda ash; 4,900 tons of caustic soda, 2,450 tons of sodium bicarbonate. The plant is intended to completely fill South Korea's needs for these chemicals.

Glass/Germany: Owens-Illinois Glass Co. and West Germany's biggest glass producer, Gerresheimer Glas-huettenwerke (Dusseldorf), are exchanging technology and process licenses, and minority shares of stock.

Sales/Europe: Witco Chemical (New York) is broadening the sales function of its British subsidiary, Witco Chemical Co. Ltd. It has bought up the outstanding minority shares of the British affiliate, and set up under it a French arm, Witco Chemical France. The French group will distribute carbon black produced by a plant being built at Bordeaux, which will be owned jointly by Continental Carbon (a Witco affiliate) and Phillips Petroleum. Witco's recently opened office in Rotterdam, also controlled by the British subsidiary, will handle Continental's Dutch output.

Pharmaceuticals/Pakistan: American Cyanamid will build a \$500,000 compounding and packaging plant in Pakistan to turn out antibiotics, sulfas, nutritionals, and other products. It's due in operation this fall. Cyanamid's Lederle Division has a packaging plant in India and has applied for government permission to build an antibiotic fermentation plant there.

Sales/Foreign: Wyandotte Chemicals is paving the way for expanded foreign operations by setting up a new unit, Wyandotte Chemicals International. The new unit—incorporated in Panama, but headquartered in Windsor, Ont.—will handle all of Wyandotte's exports and overseas production other than its existing overseas production (in Venezuela and Mexico). That will continue to be operated by its J. B. Ford Division, along with the division's exports.

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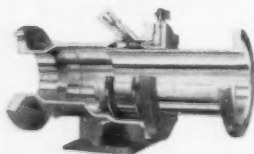
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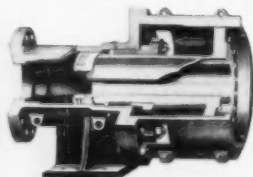
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Washington

Newsletter

CHEMICAL WEEK
January 9, 1960

Senate drug probers will launch into tranquilizers next, in four days of hearings between Jan. 21-29. The antitrust subcommittee will try to show that production of tranquilizers is even more tightly controlled through patents and licensing than the steroids. More evidence of extraordinary markups between manufacturer's cost and druggist's prices will be introduced. The producers will, of course, dispute the anti-trust subcommittee's basis for figuring costs and profits.

A second drug probe—by a federal grand jury now in session in New York—is going on. The jury is investigating possible violation of criminal statutes in the tranquilizer field.

Tranquilizers are a big chunk of the prescription market. Sales of \$200 million/year at manufacturers' price make this bigger than the steroid field, investigated during the December hearings.

Sen. Estes Kefauver (D., Tenn.), chairman of the committee, points out that use of tranquilizers is not limited to mental patients, but are also widely purchased by people suffering from anxiety, tension and emotional disorders.

Chief drugs to be examined are meprobamate (Miltown, Equanil), Compazine, Thorazine, Sparine, and reserpine (Serpasil and other brands). The witness schedule: Jan. 21, Francis Boyer, chairman of Smith Kline & French Laboratories; Jan. 26, H. H. Hoyt, president of Carter Products Inc.; Jan. 27, A. G. Brush, chairman of American Home Products Corp.; Jan. 29, G. Sichel, vice-president and counsel, Ciba Pharmaceutical Products Inc.

•
This year will be a big one for CPI antitrust cases already in the courts and regulatory agencies:

- Du Pont-General Motors stock splitup: Speculation is growing that Justice Dept. antitrusters will appeal District Judge Walter La Buy's ruling that Du Pont can keep its 23% stock interest in GM, so long as it gives up the voting rights. The government must file its notice of appeal with Judge La Buy by Jan. 16—or give up its efforts to force a complete divestment of the Du Pont stock ownership in GM. After Jan. 16, the antitrusters have another 60 days to actually docket their appeal in the U.S. Supreme Court.

- Parke, Davis price maintenance: A Supreme Court decision could come any week after the court reconvenes on an appeal of a lower court dismissal of price-fixing conspiracy charges filed by the Justice Dept. against the drugmaker. The case is a major test of a seller's right to refuse to do business with price-cutting wholesalers and retailers in non-"fair trade" areas.

- Antibiotics price-fixing: Federal Trade Commission hearings

Washington

Newsletter

(Continued)

on charges that five producers conspired to monopolize and fix prices on broad-spectrum antibiotics are at a crucial stage. FTC lawyers finished their side of the case before an FTC examiner just before Christmas. The next step—a move by the companies to dismiss the whole case, or the beginning of defense hearings.

- **Crown Zellerbach merger:** The ninth circuit court of appeals will hear arguments on FTC's ruling that CZ violated the antimerger law. FTC last year ruled CZ must divest itself of St. Helens Pulp & Paper Corp. The court of appeals ruling could come by spring, with further appeals to the Supreme Court likely to follow.

•
Requests for time extensions on the food additives deadline must be filed by Feb. 1, with supporting data. This will give FDA time to act on the requests and publish its decisions in the *Federal Register* before the act takes effect March 6.

FDA reiterated its stand that no extensions will be granted if tests show the production of cancer in animals, at any dosage level, or if tests show "alarming symptoms" other than cancer, in any dosage, unless adequate tests are submitted to establish a safe level of dosage.

FDA proposes to exempt 37 compounds used in mineral feeds that are generally recognized as safe under the food additives amendment. They are compounds that are sources of cobalt, copper, iodine, iron, manganese and zinc. Safe levels are defined for some.

Cobalt would be restricted to feed for cattle, sheep and goats; zinc to swine and poultry. This is based on data that cobalt and zinc have value only for the animals specified.

•
A new program to push American exports is in the works in Washington. The plan, initiated by Assistant Commerce Secy. Henry Kearns, is scheduled to be presented to Congress in about two months.

Most significant proposal is for a government-sponsored insurance program to finance short-term export credits. The Export-Import Bank of Washington now has limited authority to guarantee export loans, but must set aside reserves to match the guarantee dollar-for-dollar. For Ex-Im or any other U.S. agency or private insurance firm to back export credits with fractional reserves would require new authorizing legislation.

Another portion of the program would revamp U.S. commercial representation abroad by taking commercial consulates out of the State Dept.'s Foreign Service and putting them back under the Commerce Dept. The plan also would call for reporting new trade information, including and disseminating leads on new export opportunities to domestic companies.



Photomicrograph of an air bubble entrapped in a lacquer film on mahogany panel.

Portrait of a problem . . .

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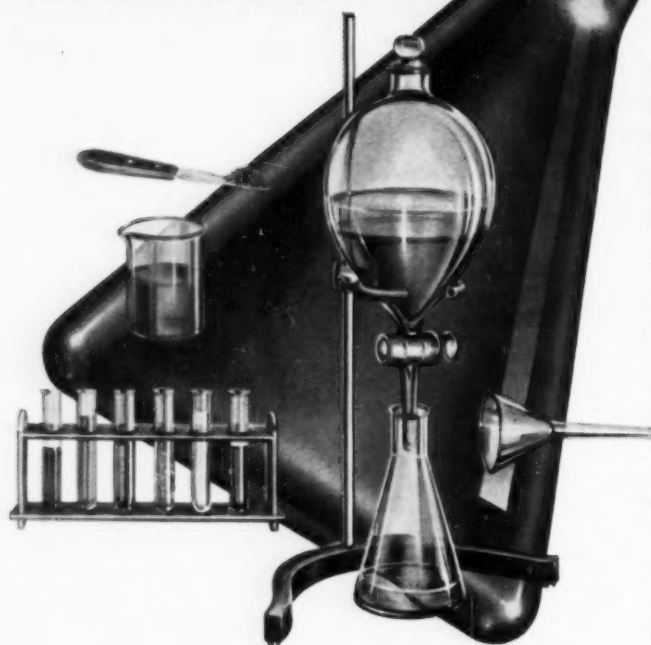
PERIODIC CLASSIFICATION OF THE ELEMENTS

GROUP	I _a	II _a	III _b	IV _b	V _b	VI _b	VII _b	VIII _b	I _b	II _b	III _a	IV _a	V _a	VI _a	VII _a	VIII _a		
1	H															He		
2	Li	Be										B	C	N	O	F	Ne	
3	Na	Mg										Al	Si	P	S	Cl	Ar	
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	La	Hf	Ta			Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	Ac	Rare Earths														
									Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
									Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No



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RESEARCH



Calbiochem's Deutsch (left) finds biochemical purification research takes unexpected twists.

Setting New Standards for Biochemicals

A recent publication—and subsequent supplements—shapes up as required reading for biochemical researchers, who buy an estimated \$20 million worth of fine biochemicals annually. The report, called "Criteria for Biochemical Compounds," is a major step toward improving the quality and standards of commercially offered biochemicals.

Publication of the report—prepared by the Committee on Biological Chemistry, Division of Chemistry and Chemical Technology, National Academy of Sciences-National Research Council, Washington 25, D.C.—caps three years of a continuing program designed to help manufacturers improve their biochemical products. The report includes data on selected purine and pyrimidine derivatives, carbohydrates, amino acids, coenzymes and related products, and lipides. It lists information on sources (e.g., the natural or synthetic raw material), methods of preparation and assay, stability, physical properties, likely impurities

How purification upgrades chemicals

<i>Chemical</i>	<i>\$/lb. Commercial Grade (40-90%)</i>	<i>Commercial Use</i>	<i>\$/lb. Research Grade (\$90-99% plus)</i>
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Trypsin	5.00	medicine	16,000
Linoleic acid	2.10	paint	1,800
Lecithin	0.14	baking	30,000
Lactic acid	0.20	food industry	1,300
Nucleic acid	10.00	medicine	4,500
o-Nitrophenol	0.45	intermediate	80
Thiourea	0.32	intermediate	12

RESEARCH

and methods of determining them.

Subcommittee members—drawn from firms that make the various products- and raw-material suppliers helped pull the necessary criteria together. Their purpose: to give users information on which to base their own conclusions as to the purity of available compounds.

That's not to say, of course, that major suppliers aren't generally trustworthy in labeling their biochemicals. Rather, this subcommittee opinion reflects the fact that only the ultimate researcher himself can know what, if any, further purification his biochemicals will require.

In fact, major suppliers of fine biochemicals are represented on the subcommittees charged with bringing new standards to their industry. Other firms in the field are contributing valuable data. Help for the project has come from such companies as Schwarz Laboratories, Inc. (Mount Vernon, N.Y.), Pabst Brewing Co. (Chicago), Hormel Foundation (Austin, Minn.), and Dow Chemical (Midland, Mich.).

For example, subcommittee member (pyrimidines) Alfred Deutsch is also president of California Corp. for Biochemical Research (Los Angeles), a specialty biochemical maker, with sales of about \$1 million/year. Cal biochem makes about 500 items, also does substantial business in purifying, analyzing, and repackaging biochemicals for other firms. (Under a recent contract, it will handle U.S. and Canadian sales of high-purity enzymes such as catalase, peroxydase and trypsinogen for West Germany's C. F. Boehringer & Soehne GmbH.)

Like the majority of fine-biochemicals producers, Deutsch's firm exercises special care in turning out compounds. Typical of the precautions to avoid contamination (which help explain why the biochemicals are so costly): only one product is made in the labs at one time; labs are specially designed to keep dust at a minimum. No metal equipment can be used for most chemicals, since metal ions are serious contaminants.

In purification research, unexpected results can crop up, Deutsch says. Ethyl indoleacetate, a plant growth regulator previously known only as an oily liquid, was found to crystallize as a white solid, melting at 42 C when highly purified. Deoxyribose, a rare

sugar used in making polio vaccine, was believed to be very unstable, deteriorating rapidly. On purification, it turned out to be stable enough to be stored for years at room temperature.

Upgrading ordinary chemicals can also yield dividends. Crude linoleic acid, worth \$2.10/lb. in paint grades, sells for about \$1,800/lb. when highly purified in the form required for cholesterol metabolism research. To get this purity requires saponification of safflower oil, two crystallization steps, esterification, fractional distillation, and further saponification. This pure form must be shipped in vacuum-sealed containers, stored below 5 C.

Raw-Material Search: There's also the research problem of finding potentially valuable new fine biochemicals in exotic raw materials. Calbiochem, for example, is currently making a nucleoside antimetabolite for cancer research from salmon sperm.

Some subcommittee members hope to eventually turn out supplementary criteria on biochemicals representing the highest purity obtainable without regard to demand, production costs, and the like. This is being deferred while the success of the present report (which covers the ordinary commercial biochemicals) is being evaluated.

Meanwhile, the Committee on Biological Chemistry is looking for helpful criticisms of its new report, expects to incorporate them into future additions. And it fondly envisions the time when "chemical products sold for biochemical research will bear a list of those of their properties that adequately define their purity."

Spending Record

Total U.S. R&D spending will top \$12 billion over a 12-month period in '59-'60—\$7 billion more than the U.S. total in '53—the National Science Foundation estimates. Details are in a new NSF study, "Funds for Research and Development in the United States, 1953-'59," available (10¢) from Superintendent of Documents, U.S. Government Printing Office, Washington 25.

Projected R&D expenditures: industry, \$9.4 billion; federal government, \$1.78 billion; colleges and universities, \$1 billion; others (non-profit institutions—e.g., philanthropic foundations, health agencies), \$250 million.

EXPANSION

- Pennsalt Chemicals Corp. has purchased a 50-acre site at the King of Prussia, Pa., industrial park for a \$6-million technical center. Construction of the first building, a 21,000-sq.ft., two-story laboratory, will be completed this year.

- The recently formed polymer division of Western Petrochemical Corp. has completed a new R&D laboratory at Chemical Industries Park in Newark, N.J.

- The Kordite Corp. (Macedon, N.Y.), subsidiary of National Distillers and Chemical Corp., will build a \$2-million research and technical service center. Polyethylene and other plastic films will be studied in the new facility, expected to be ready by Jan. '61.

- United Research Corp. (Menlo Park, Calif.) has been granted a use permit for its proposed rocket-fuel testing center by the Santa Clara County Planning Commission. The center will be put up about seven miles south of Mt. Hamilton, site of Lick Observatory. Earlier, the county had rejected URC's proposal because of possible air pollution and impairment of the efficiency of Lick's 120-in. telescope. Under the new permit, all testing is prohibited when the wind is blowing toward Mt. Hamilton. Nuclear testing, testing of explosives, and use of mercury vapor lamps is prohibited at all times.

- Boeing Airplane Co.'s Wichita, Kan., division has completed a new 40,000-sq.ft. research and development building designed for studies and testing of aircraft materials. Included: a chemistry laboratory plus 14 other laboratories to handle ceramics, finishes, radiochemistry, fuels and lubricants, sealants, plastics, and the like.

- A new microscope laboratory has been established in New York by E. Leitz, Inc., U.S. sales arm of Ernest Leitz, GmbH. (Wetzlar, Germany). A function of the lab will be to suggest optical techniques and equipment for use in research projects.

- Minnesota Mining and Manufacturing Co. will build a \$10-million, 14-story administration building at its research center just east of St. Paul, Minn. Four additions and two new buildings already under construction at the center will be completed in '60.

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Standard Financial's Silbert offers CPI new credit financing plan.

New Spur for Factoring

Bill-collecting problems are mounting for chemical process companies. The marked slowdown in payments noted several months ago (CW, Oct. 10, '59, p. 99) has worsened, now threatens to extend well into this year. Last week, CPI credit managers openly voiced concern, talked of reluctantly turning to factoring and other credit-financing expedients to cut back investments in financing overdue accounts and to ease working-capital positions.

The lagging payments on receivables can be blamed on several characteristics of the current U. S. economy. Basically, the U. S. is in the midst of a credit squeeze resulting from its highest prime borrowing rates since '31. These rates might be increased again this year, which helps dim hopes for a better payment situa-

tion this year. This means a pinch for many customers, particularly the smaller and the undercapitalized ones that depend on short-term financing to meet current obligations. As their collections lag, they tend to rely on their suppliers for financing, stretch out payments as long as possible.

The payment stretchout (lengthening the period between billing and payment) has become significantly longer since the first quarter of '59. In the CPI, for example, the payment period has increased from an average of 33.5 days in early '59 to over 35 days. Some firms report waiting 90 days or longer for their money.

Stretchouts have left CPI manufacturers in a poor working-capital position. Gross receivables in this industry have increased \$380 million

since '54. The typical drug and chemical producer's receivables have increased about 20% since '54, while working capital has increased only 4%. The proportion of the average firm's current assets represented by cash and treasury securities declined from 27% to 21% during the same period, while the proportion represented by receivables rose from 22.5% to 26.7%. Working capital is being squeezed flat.

One Solution: A result is that factoring, a last resort as far as many CPI credit managers are concerned, is getting new consideration. And some factoring houses, timing their moves to catch this new interest, have modified the conventional procedures to fit better into CPI practices. Typical plan is Standard Financial Corp.'s recent innovation.

Here's how Standard's Vice-President Arthur Silbert (*see picture*) explains it: "In large part, the plan observes many factoring conventions—the manufacturer sells his accounts receivable to us for 100% of face value in cash. We assume the task of collecting the accounts and the risk if the manufacturer's customer fails to pay up. All bad-debt losses fall on us. For this service, we charge a fee, plus interest, totaling 10-15%, on the money the manufacturer receives."

In some cases, Standard permits a manufacturer to take down advances against anticipated receivables.

One serious drawback to factoring, many credit managers feel, is notification. This means that the manufacturer's customer must be notified on the invoice that the bill is to be paid to the factor. Standard's new credit-financing plan — and plans of some other factors — eliminates notification by having the customer remit to a box number in the name of the manufacturer. "This way, the customer need never know that his account has been factored," Silbert says.

Another Method: Also gaining acceptance is accounts-receivable financing. By this method, instead of buying a manufacturer's accounts receivable, the financing company lends the manufacturer cash against receivables as collateral. Normally, the cash advance is 80-90% of face value when the goods are shipped. The

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SALES

Manufacturer makes the collections, retains the bad-debt risks. There is no service fee, and the interest rate usually amounts to about 1% / month.

It should be pointed out that commercial financing — by either method — is based on a premise different from that of other financing. In normal borrowing, the lender usually scales the credit to conform with the borrower's net worth. In commercial financing, it's the receivables that are important.

The Other Side: But despite the rapid growth in popularity of commercial financing (firms in that business advanced a total of about \$11 billion to industry in '57—accounts-receivable financing accounted for \$6.5 billion; factoring, \$4.5 billion), many CPI concerns accept it reluctantly.

Some credit managers prefer to "push, and push hard, for 30-day payment periods to avoid having customers lean too heavily on suppliers," according to Witco Chemical Co.'s General Credit Manager Everett Utter. He told *CHEMICAL WEEK* that, although factors provide all the bill-collecting procedures, eliminating much credit-department overhead, he prefers to "go it alone." He added that he saw little hope for improvements in credit or collections as long as tight money and high interest rates continue.

California Spray-Chemical Corp.'s General Credit Manager C. M. Stutfield said recently that his company relies on firm credit control in times of slow payment, sets strict payment periods and holds customers to them.

"We made an investigation, supervised by the National Assn. of Credit Men, to determine the relationship between degrees of credit control and changes in sales volume. It was apparent that strict enforcement of credit controls did not in any way interfere with volume-building efforts. There was no evidence to support the belief that loose credit administration helps increase sales. As an added attraction, it also appeared that firm credit control produced more earnings. There really is no substitute for sound business practices."

Bleak Future: It's obvious that many CPI credit men would rather fight the payment lag without factoring by employing such "tools" as firm credit controls, assistance to customers and,

if necessary, longer payment periods.

Edwin Moran, executive vice-president of the National Assn. of Credit Management, in summing up the situation, painted a bleak picture for at least half of this year. He told *CHEMICAL WEEK*:

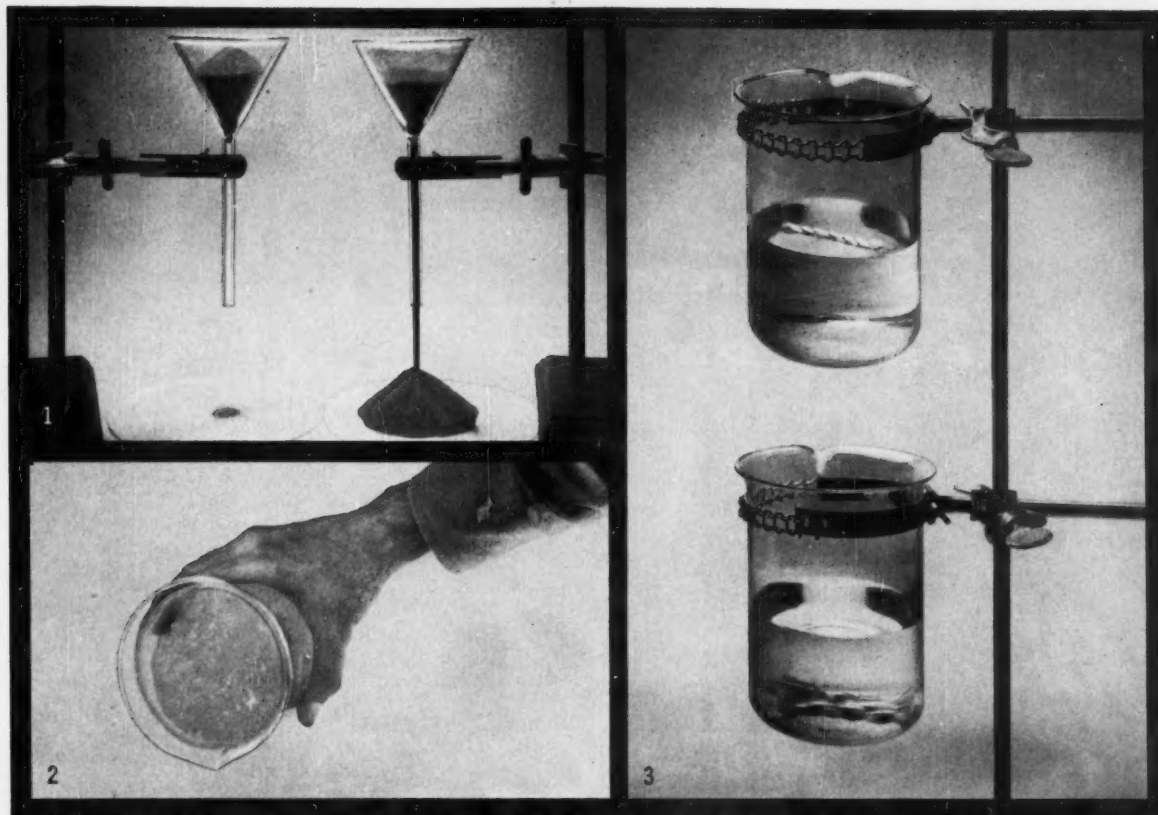
"Money, credit and increased interest rates are the principal topics of discussion today. Tight money will be with us through the next six months, with some possible easing by summer. Firms that require increased borrowing for inventory purposes, research, production and distribution, beyond normal banking facilities, may be able to obtain some through factoring houses, commercial-finance companies, or increased stock issues. Other means: faster turnover of working capital gained by tightening up on sales terms and maintaining a closer follow-up on slow accounts."

Buyers Look Abroad

Chemical buyers from all over the country will be taking a close look at prospects for the '60s — both here and abroad — during the annual midwinter meetings of the National Assn. of Purchasing Agents' Chemical Buyers Group. The meetings will be held in Chicago, Jan. 28; in New York, Feb. 4.

Highlight of this year's meeting will be an afternoon workshop on foreign buying, first of its kind for the group. Ten CPI purchasing agents under the direction of Fred Schmitt, director of purchases, Merck & Co., will join in the study of chemical "X" — how to buy it, where to buy it. Purpose of the workshop will be to draw out panel members and the audience on the pros and cons of foreign buying of chemicals. Their views (to be reported in *CHEMICAL WEEK* following the meetings) will give an indication of future buying practices within the CPI, help to bring into focus the probable magnitude of chemical imports and exports.

Two CPI men, International Minerals & Chemical Corp.'s C. S. Dennison and Columbia-Southern Chemical Corp.'s R. R. MacIver, will speak. Dennison will address the group on "The Changing World Chemical Industry and Its Impact on the Chemical Buyer." MacIver will examine some legal aspects of trade relations.



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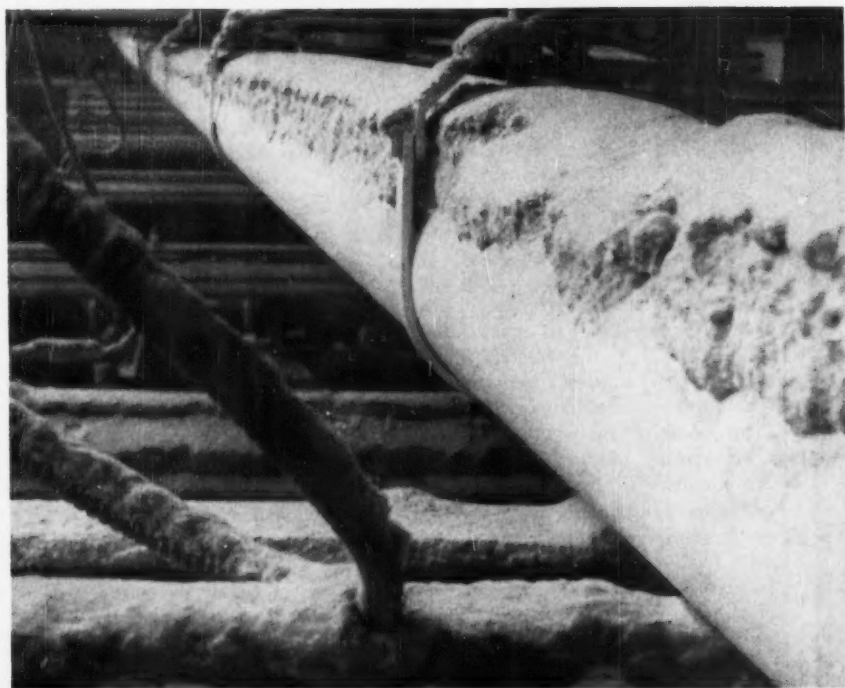
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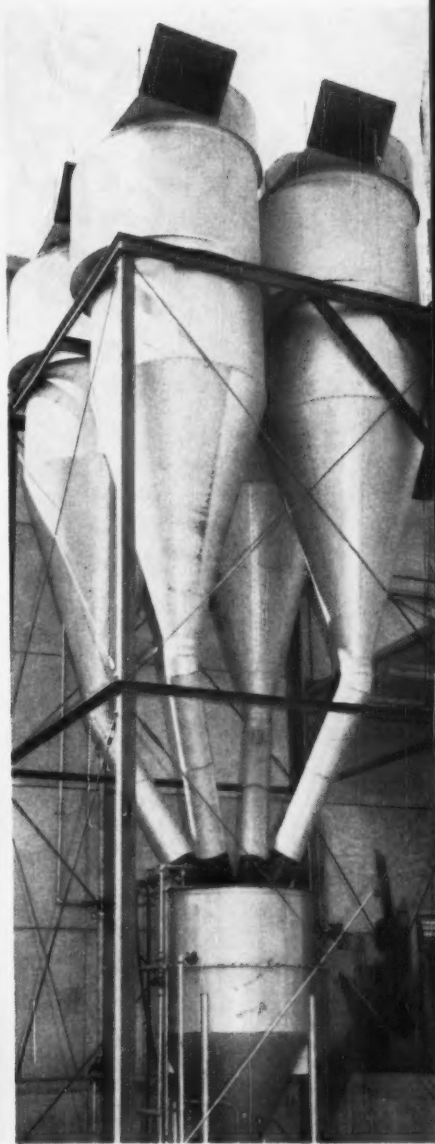
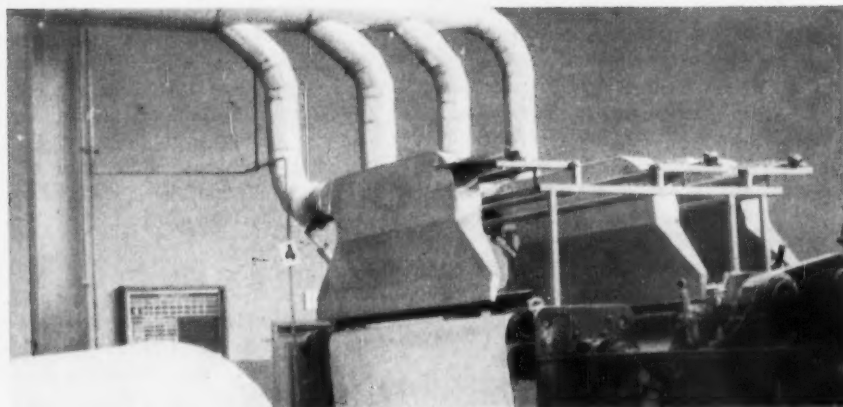
CORCO



PRODUCTION



DUST covers pipes, supports at plant lacking dust control.



NEW DUST FIGHTERS include slot-type hoods (above), water-spray cyclones (right).

New System Cuts Dust Fighting Costs

This week, Crown Zellerbach Corp. is preparing to add new paper converting equipment to its Los Angeles plant. A major part of the addition will be expansion of the plant's six-month-old dust collection system which has proved under rugged plant conditions that it can solve troublesome paper dust problems with lower cost, less cumbersome equipment than that in conventional use.

The system's prototype, designed by Engineers Associated, Inc. (Berkeley, Calif.), was installed at CZ's Antioch plant. CZ put it through its paces for about a year, decided to install it at Los Angeles, too. And, although these are the only installations that have been made to date, EA's system has features that make it ripe for study by other chemical processors.

Keys to the system: high-air-velocity

slot-type hoods that cover only a small fraction of the area that would be covered by conventional canopy-type hoods but pick up larger quantities of dust; and a water lock, rather than a mechanical lock, that prevents thick, stringy waste from fouling the dust-discharge mechanism of the centrifugal separators (see pictures above).

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for canopy hood installations: power and maintenance savings average about \$10,000/year.

Although the system was designed for paper converting operations, EA says it could be adapted to any process that generates dust from a moving web, sheet or conveyor belt.

EA is no newcomer to dust collection outside the paper field, has developed systems for glass, silica, rubber and gypsum dusts, and has carried out smog-control studies. In fact, CZ presented its paper dust problem to EA as a result of the engineering company's general research studies of solid-particle movement in air.

Converting Dust: Dust problems are common in all paper converting operations, particularly in perforating tissue and rewinding it onto large rolls. Dust several inches deep quickly accumulates on exposed surfaces, creates a fire hazard and a maintenance problem, especially with electrical and electronic equipment.

Over-all hooding of equipment is costly, interferes with process operation and maintenance. Even modified canopy hooding over rewinding machines requires high horsepower usage because large volumes of air must be sucked into the large openings of the hoods at a rate sufficient to entrain the dust.

EA decided to cut down the size of the hood opening by using a long, narrow (slot) hood that would permit high air flow rates, keep horsepower down. (Slot hood air velocity is in the 1,500-3,000 ft./minute range; canopy hood air velocity is in the 200-400 ft./minute range.)

Major problem: to obtain even flow rate across the entire 90-in. opening needed to cover the rolls of tissue. Six months of pilot studies at CZ's former San Leandro plant led to use of a fish-tail hood with special interior baffles; this maintains constant velocity across the opening within 10%. Without the baffles, air velocity variations would make the hoods unusable. (Patent applications are pending on the design.)

The hoods are retractable for easy machine servicing. Distance from hood to paper web is critical, determines the horsepower needed to obtain sufficient air velocity to capture dust particles on the paper

surface, yet prevent the paper from being inhaled through the hood.

Once the dust is picked up and carried away from the area, high-velocity centrifugal separators drop it out of the air stream with the aid of water sprays. Conventional low-velocity cyclones would not drop out the low-micron-size paper dust, and high-velocity cyclones with rotary gates were troubled with intermittently stringy waste that fouled the gates.

The water sprays overcame the need for elaborate wet and dry (e.g., bag-type) collectors, solved the rotary gate problem. The water spray and wet dust collect in a water chamber which acts as an air lock at the bottom of the separator. The particles settle out—in one installation, they're removed continuously by means of a water-jet ejector system; in another, they're removed periodically by a sludge pump.

Comfort Level: When the systems were installed, CZ came up with a bonus. The hoods result in mild air circulation, help cool in warm weather. Of course, in cool weather the reverse is true—the area must be heated to maintain comfort.

Real proof of the system's worth is in dust count measurements: 50 mg./cubic meter before installation, 1 mg./cubic meter after installation. But the change is so dramatic, CZ personnel don't have to read the reports to tell that the difficult dust problem has been solved.

EQUIPMENT

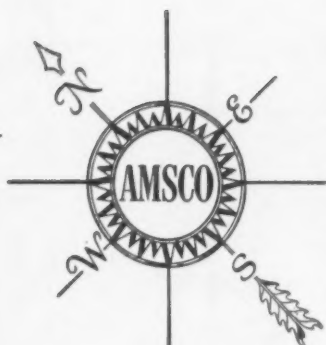
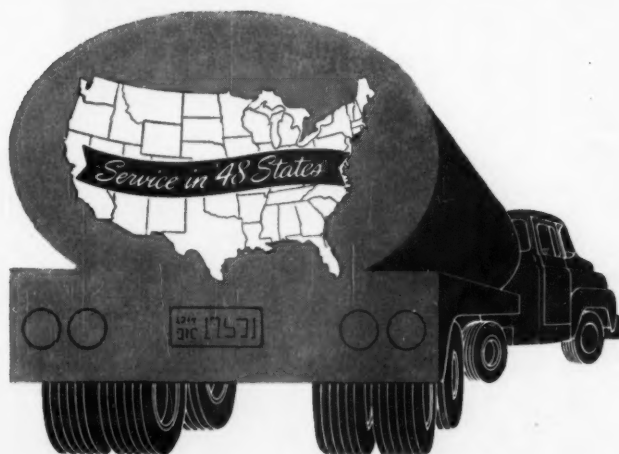
Changing Hands: Effective the first of this year, The Grisco Russell Co. (Massillon, O.), maker of heat transfer equipment (including liquid-metal heat exchangers for atomic power plants), became a subsidiary of Hamilton-Thomas Corp. (Hamilton, O.). It is now aligned with H-T's C. H. Wheeler Mfg. Co. (Philadelphia) subsidiary, which makes steam condensers, jet ejectors, condensate and circulating pumps.

GR was formerly a subsidiary of General Precision Equipment Corp. (New York), maker of electronic, motion picture and control equipment. GPE, which is reorganizing into a more tightly knit group, has set up General Precision Laboratory, Kearfott, Librascope and Link as divisions rather than subsidiary companies.

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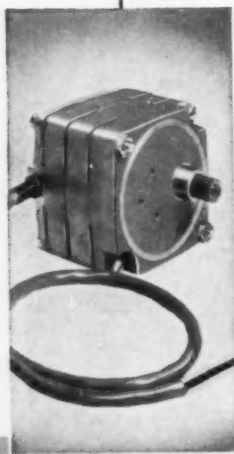
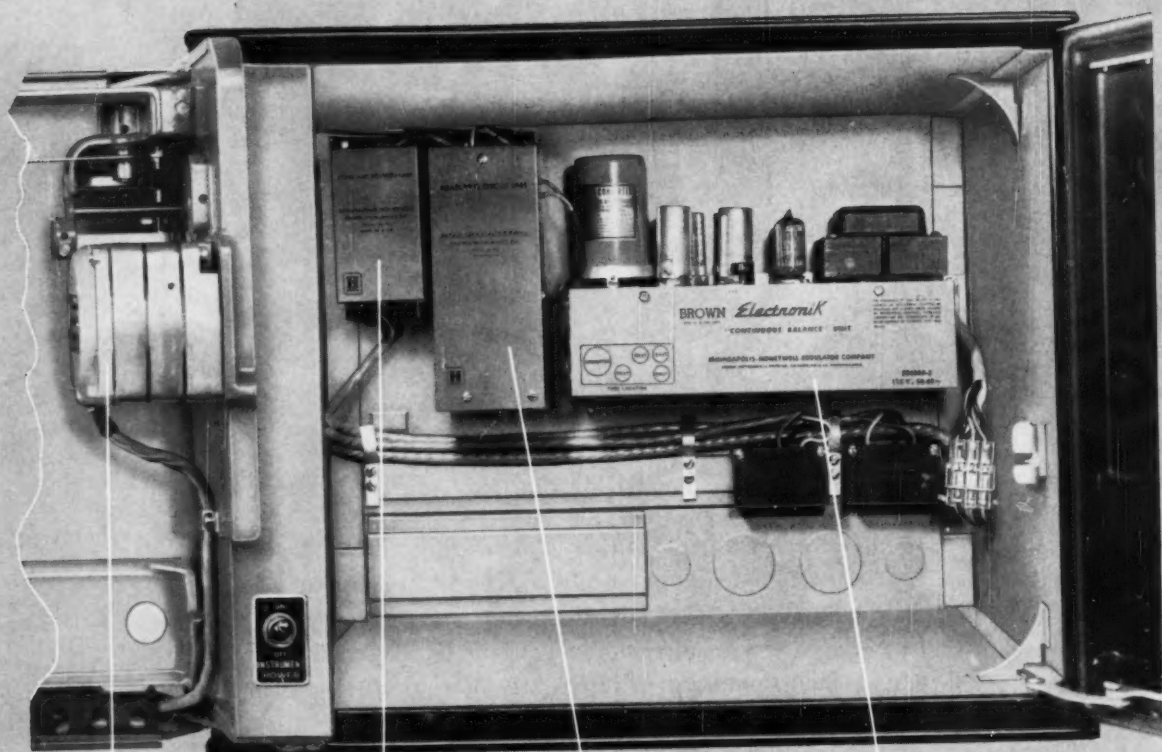
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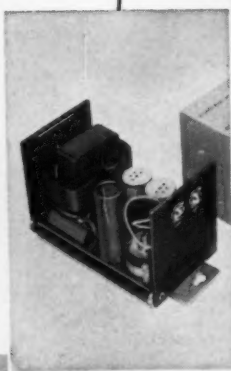


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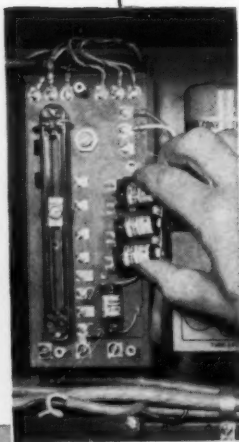
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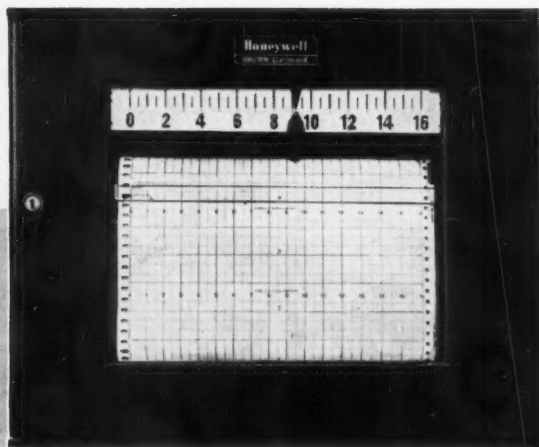
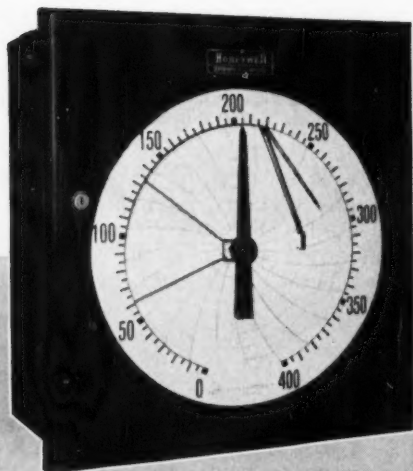
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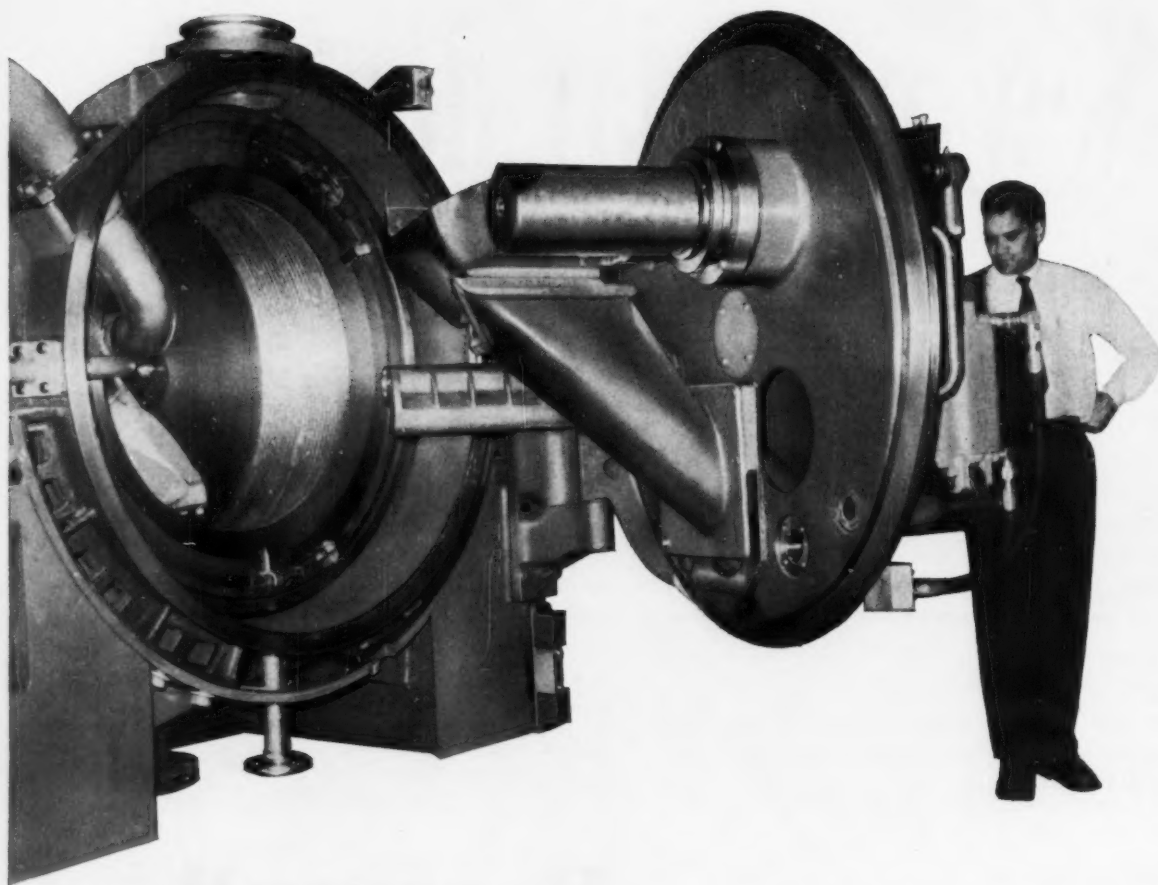


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Bypassing the By-Product Route to Iodates

The increasing attractiveness of electrolytic processing techniques was emphasized last week by an impressive progress report on Deepwater Chemical's (Compton, Calif.) iodate plant. It is reportedly the first and only commercial electrolytic facility producing iodates. And its record of five years of trouble-free operation—with the original anodes still as good as new—reflects the care and engineering skill used in scaling up a classical laboratory electrolysis system to production proportions.

The electrolytic process is well suited to relatively small-scale production, says Deepwater President Ted Whitmore, because it's clean, runs at the unusually high efficiency of 94-96% and yields only the iodate. The nonelectrolytic route, on the other hand, produces potassium iodate as a by-product of potassium iodide—yielding one mol of KIO_3 for every five mols of KI.

Deepwater originally had potassium iodide, wanted a direct route to the iodate. The competitive economics of the electrolytic process have been favorable for the company's own operations, says Whitmore, although iodate demand still hasn't come up to the company's earlier expectations. One important reason for the hazi-

ness of the iodine industry picture, he adds, has been the price war, which started with Japanese imports at prices below Chilean iodine prices, resulting in the current low tab of about 95¢/lb. of crude iodine. Currently, most of Deepwater's iodate goes into calcium iodate for cattle feed, but Whitmore foresees growing chemical applications for iodates as selective oxidizers.

Design Economics: Five years ago, Deepwater decided to explore the economic feasibility of electrolytic iodate production. Basically, such a process would be a scale-up of a classical lab procedure. The problems in doing this scale-up were outlined for the first time at last month's American Institute of Chemical Engineers meeting by American Potash & Chemical Corp.'s Joseph Schumacher. Schumacher, formerly with Western Electrochemical, designed the Deepwater plant. Here is how design details of Deepwater's unit were determined by considerations of operating economics:

Scale-Up Problems: Schumacher's starting point on the Deepwater project consisted of basic data from Foerster's "Electrochemie Wasseriger Losungen," obtained from laboratory-scale electrolysis of potassium iodide

with platinum electrodes at room temperature. This provided basic laboratory data indicating how current efficiency, cell voltage and product quality are affected by operating variables.

The conventional approach to cell design, said Schumacher, requires construction of a pilot-plant cell to find the answers to economic and technical questions. And if the commercial plant requires a very large scale-up, a full-scale prototype cell is often required to eliminate the risks. However, the relatively small size of Deepwater's plant — 150 lbs./day of potassium iodate — plus similarities between iodate and chlorate processing enabled Schumacher to design the cell directly from laboratory data.

Design Factors: One of the first design considerations was the selection of the cheapest electrode and construction materials consistent with high current efficiency and low maintenance costs.

Lab experiments proved that graphite anodes, used commercially in chlorate cells, could be substituted for platinum in the iodate cells. In addition to lowering the initial cell cost, the rough-surfaced graphite anodes prevented polarization prob-



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lems that limited smooth-surfaced platinum electrodes to a maximum current density of about 9 amperes/sq. ft. Nickel was chosen as the cathode material.

The next job was to determine current density for best return on investment as determined by factors such as capital costs, power consumption and maintenance costs. Since Deepwater's production requirements were small, power costs were less significant than usual for an electrochemical plant. Therefore, to minimize labor costs and plant investment, Schumacher decided to use four 500-ampere cells, which would utilize a 500-ampere rectifier already available at the plant.

Optimum cell size and length of the batchwise operating cycle were determined by solubility data on the iodide-iodate system. As now operated, each cell is charged with 180 gal. of fresh feed; electrolysis runs for two days to build up potassium iodate concentration to the desired level. The product is then pumped to crystallizers for recovery and refining.

Physical design of the cell borrows heavily from chlorate processing practice because the reaction mechanics of the iodate production are generally similar. Anode-cathode spacing has little effect on current efficiency, is set at the minimum consistent with adequate hydrogen gas removal.

Optimizing Operation: The engineering improvements incorporated into the graphite-anode iodate cell permitted the use of several other efficiency-boosting departures from the laboratory setup. In the earlier system, for example, anode current efficiency was critically sensitive to two things—the limiting current density, which, if exceeded, produced oxygen evolution; crystallization of the slightly soluble potassium iodate product at the anode. Solubility can be increased by raising the operating temperature above room temperature, but this also reduces the critical current density.

In Deepwater's unit, by using graphite anodes that remove the major current density limitations, operating temperature can be raised to 50 C, which reduces voltage requirements, increases the rate of reaction, and eliminates iodate crystallization at the anode.

The bonus of long anode life is attributed to the low discharge potential for iodide ions (0.54 volts, compared with 1.36 volts for chloride ion). Because this discharge potential is lower than those for water (1.23 v.) and hypoiodite (0.78 v.)—either of which would liberate graphite-destroying oxygen—the iodate cells show no anode consumption after five years of operation.

In reviewing the Deepwater development, Schumacher pointed out that the general increase in relatively low-cost electric power and the demand for electrolytically produced chemicals presents a challenging engineering opportunity. What's needed, he says, is more research on the basic factors of cell design.

Radioisotopes Roundup

A report on all-industry experience with the use of radioisotopes was issued last week by the National Industrial Conference Board (New York). The report uncovered some troublesome wrinkles in the methods of using radioisotopes, but showed there is clear incentive to iron these out: the return of savings over investments averaged 10-fold.

Each of the 523 companies canvassed for the survey told how it had used the radioisotopes' peculiar characteristics of being virtually indestructible, and easily detected, measured and photographed through solids. Each company's uses were classified in three categories—gaging, radiography, tracing. Gaging uses variable resistance of materials to radiation for continuously measuring thicknesses, densities, and levels inside solid containers; radiography utilizes radiation similar to X rays; and tracing uses easily detectable radiation to follow fluid flows through processing systems and to perform quantitative analyses of substances tagged with radioisotopes.

These applications are particularly suited to the processing systems of the CPI, which showed both the highest investment and the highest declared savings for the year covered ('58). Those companies engaged in chemical manufacturing, drugs, paper and its by-products, petroleum refining, and plastics reported the following:

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ENGINEERING

and allied products invested \$369,000; savings: \$2.8 million.

- 32 petroleum refiners invested \$295,000; savings: \$11.7 million.

- 38 chemical makers invested \$294,000; savings: \$4.4 million.

- 26 rubber companies invested \$288,000; savings: \$2.8 million.

- 20 drugmakers invested \$126,000; savings: \$1.0 million.

- 30 plastics companies invested \$119,000; savings: \$1.4 million.

The applications reported were characteristic of each industry's manufacturing processes. The paper companies' principal use was for gaging: Three companies measured the densities of black liquor and clay slurries; eight measured pulp-slurry and wood-chip levels in containers; and nearly all used radioisotopes to measure the thickness of everything from cigarette paper to asbestos.

The petroleum refiners used gaging to measure liquid levels in coke drums and hot oil containers, radiography to inspect castings and fabricated equipment, and tracing to follow process flows, measure mixing efficiencies, analyze for sulfur.

Chemical manufacturers listed 29 gaging, eight radiographic, and 94 research (primarily tracing) applications. Rubber companies listed 37 gaging applications and three research applications. Drug companies listed 37 research applications. Plastics makers listed 39 uses of gaging.

Limitations: In opposition to the declared savings, the report uncovered a list of difficulties and restrictions on the use of radioisotopes. Most of the difficulties were administrative. An AEC license must be obtained for the use of radioisotopes, and licensors must arrange for periodic inspections at least every six months. Personnel administration difficulties, because of overexposure hazards, were encountered, and one company reported that gamma-ray work had become less popular than X-ray work.

Several companies reported that unions had demanded premium pay for workers handling radioactive material, although there were no reports of premium pay having been granted. Also, there were the tight administrative controls required for regular monitoring procedures, providing employees with film badges, and periodic physical examinations. Finally, there was the problem of waste disposal.

The restrictions on the use of radioisotopes seemed principally one of instrument design. A plastics company reported that the target area of a gage (1 in. diameter) was too small for practical use. A large paper manufacturer complained that the gaging instrument was too bulky, and another paper manufacturer complained that the instrument was too fragile for ordinary use and too difficult to maintain.

Most companies who have radioisotope experience feel, however, that any present troubles are only development-stage difficulties, and companies building new plants report that they are planning to incorporate radioisotope instruments into these plants.

PROCESSES

Vitamin B₁₂ from Wastes: Aschaf-fenburger Zellstoffwerke AG. (Reden-felden, Bavaria) has developed a biological synthesis, said to double the yield of vitamin B₁₂ obtained from waste disposal plants. The process: 100 parts of pure water is mixed with one part of glucose and sterilized by heating. Ten parts of a *propionibacterium* culture are added and the mixture fermented for two days at 28-30 C. Then a trace of 5,6-dimethylbenzimidazole is added. More glucose is added and the fermentation continued for six more days, while pH is controlled at 6.6 with additions of sodium carbonate. The bacteria are then precipitated by reducing the pH with sulfuric acid, separated by centrifuge. The yield is about 3.6 milligrams of B₁₂/liter instead of 1.6 mg. obtained by conventional methods.

Heavy Water: The Atomic Energy Commission has commissioned Esso to investigate new ideas for making heavy water. Of nearly 100 processes so far investigated, four are described as having potential advantages: ammonia distillation, resonant electrolysis liberating deuterium directly, hydrogen-water-hydrazine dual-temperature exchange, and feed concentration by char absorption. All of these need more experimental proof. Scientists concluded it unlikely that any new process will greatly improve AEC's present process—called the hydrogen sulfide-water dual-temperature technique—which manufactures heavy water at about \$28/lb.





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MARKETS

Carbon Black's Running Start into '60s

When U. S. carbon black producers added up their books last week, the preliminary tally showed a bright picture for the industry. Total shipments of carbon black—both domestic and export—had rebounded from the '58 slump and hit a new high; and at the same time, inventories have been pared back to more normal levels. For '60, a further 3% sales rise and a substantial capacity increase are predicted, despite the first significant output from foreign plants owned by U.S. companies.

Total carbon black shipments in '59 (including thermals) increased almost 20% over the '58 industry shipments—and, in doing so, passed the 2-billion-lbs./year mark. Although official industry figures are still not available, best estimates based on 11-month figures are that the final shipments will be between 2.03-2.04 billion lbs. Previous record was in '55, when the yearly shipments totaled 1.8 billion lbs.

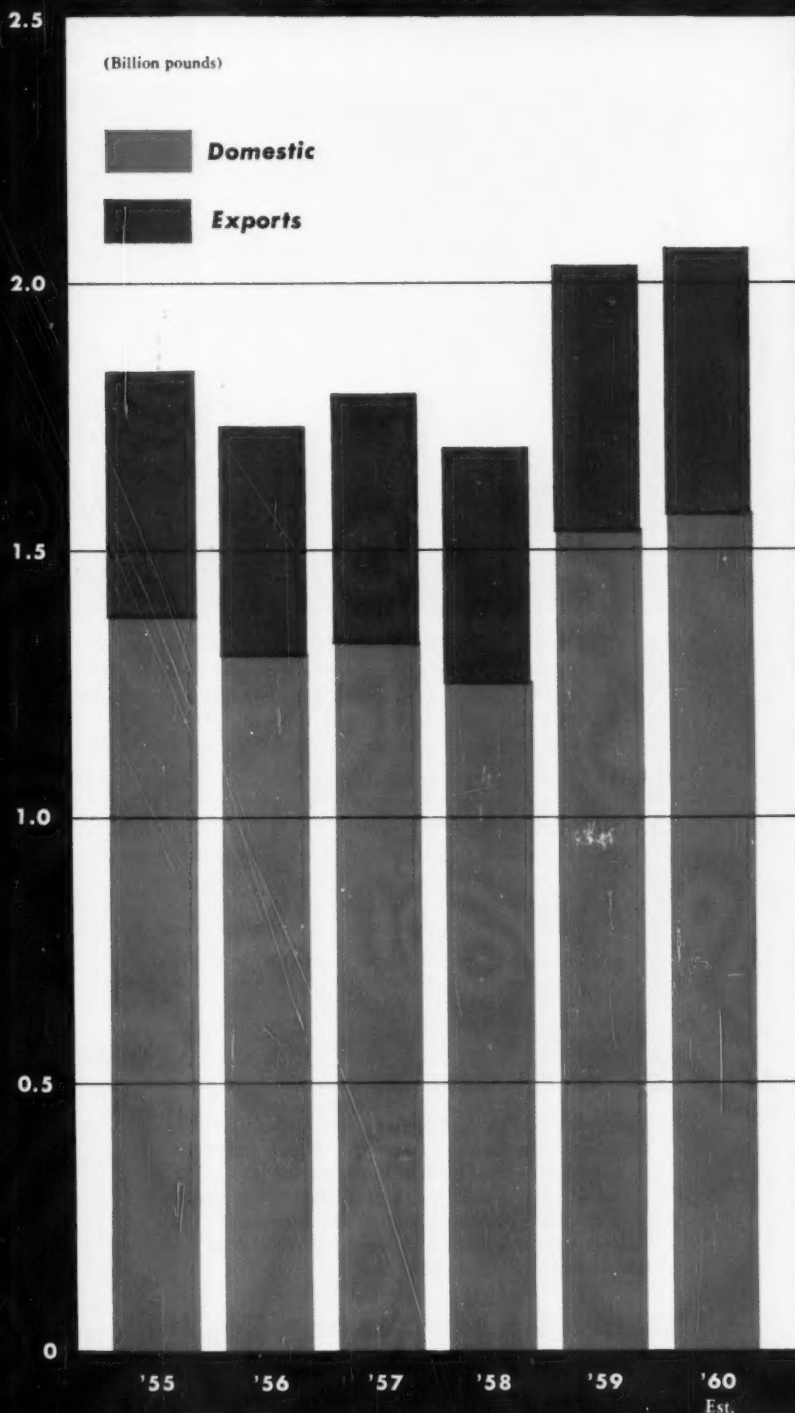
Behind the Upturn: In general, the increasing sales are due to the overall improvement in the U. S. business picture—particularly in the rubber and tire industries. Increasing export of carbon black helped too.

About 95% of carbon black shipments go to the rubber industry; and while most rubber products require the black, tires and tire products are prime users (since 63% of rubber goes into tire products). In tires, an estimated 50 lbs. of the black are used for 100 lbs. of rubber.

And tire sales have been booming. Preliminary estimates by the Rubber Manufacturers Assn., based on 10 months of '59's actual records, show shipments of replacement passenger car tires will be more than 65 million units in '59—almost 7% higher than the record set in '58. Original-equipment tire shipments are expected to be about 29 million—30% higher than for '58, but well below the record 42 million in '55. Total shipment of automotive truck and bus tires will be around 110 million units, second only to '55 totals.

Part of the replacement tire increase during the past two years is, of course, due to sales for cars turned

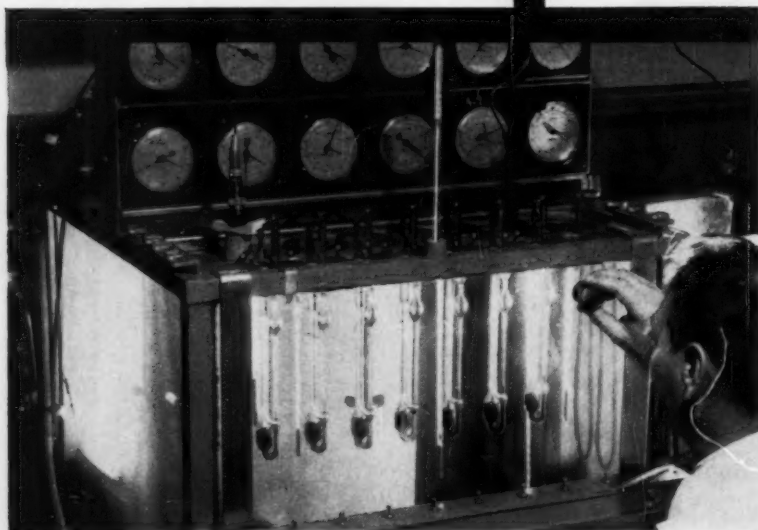
Carbon black shipments top 2 billion lbs.



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MARKETS

out in the record sales year '55—the original tires have had to be replaced.

Consumption of new rubber also set new records in '59: approximately 1.6 million long tons. This is 19% higher than in '58, and nearly 100,000 l.t. higher than the record in '55. Of this total, more than 1 million l.t. went into the production of tire and tire products, topping the record 960,000 set in '55.

Off the Road: But another important factor in the rise in carbon black shipments is the nearly 20% increase in new rubber (natural and synthetic) consumption for nontire products. It will be more than 100,000 l.t. higher than in '58 and about 13,400 l.t. more than the record in '55.

Still another contributing factor is the continuing rise in the use of synthetic instead of natural rubber. In the U.S., 65-66% of total rubber used is synthetic. This is helpful to carbon black makers because synthetic rubber requires more carbon black than does natural. In '59, consumption of synthetic rubber moved over the 1-million-l.t. mark, up 120,000 over '58 and breaking the record 926,000 consumed in '57.

Pushed largely by the rubber demand (expected to hit 1.65 million l.t., an increase of 35,000 over '59) carbon black will likely be up about 3% in '60.

Exports—Black? The export situation for carbon black in '60 will likely not be as bright as it was last year. Exports in '59 set a record, as the industry shipments abroad (included in the total industry shipments of over 2 billion lbs.) are estimated to have hit more than 500 million lbs./year. High mark before was 460 million lbs. shipped in '57.

Reason for the increase is, of course, the sharp rise in overseas requirements for rubber products, particularly tires. And, as foreign nations become more and more industrialized, demand for autos, trucks, buses and other tire products, plus heavy demand for nontire products, will continue to boost demand for rubber and carbon black.

It is this very rapid growth of rubber use outside the U.S. that may well alter the export picture in '60. Of course, many other factors figure in the producers' plans to build plants in overseas market areas:

- Nearly all carbon black is now made from oil, rather than from natural gas. This makes it possible to obtain and transport this raw material to plants in most parts of the world.

- Besides the difficulties in converting foreign currency into U.S. dollars, the European "Common Market" now threatens to limit imports from nonmember countries, and the importance of having plants inside this bloc is clear.

Foreign Legion: Plants in which U.S. producers have investments are springing up throughout the world. Godfrey L. Cabot, Inc., opened its plant in Australia last August, while Columbian Carbon Co., another of the top four U.S. carbon black producers, started construction on a 60-million-lbs./year plant in northern Italy, near Milan, in July.

In Nov. '59, Phillips Chemical Co. revealed plans for a joint venture with ANIC, an Italian firm, for the construction of a 25-million-lbs./year plant in Italy. And last fortnight, Phillips licensed Showa Denko, K. K., to produce furnace black. The plant is due by the end of '61.

United Carbon Co., which has some overseas plants, is in the process of expanding its position outside the U.S. and will probably come up with expansion plans in '60. Columbian Carbon will complete a 30-million-lbs./year plant at Rotterdam, Holland, early in '60. Meanwhile, several other carbon black expansions—by both U.S. and foreign firms—are also under way and scheduled for startup in '60 and '61.

Thus, the outlook for carbon black exports in '60 is still difficult to predict. Exports will likely not suffer seriously—there will be little drop from the '59 record output. Reason: most plants due onstream in '60 won't come in before the second quarter of '60. And, since most customers will want to test the output from a new plant, large shipments likely won't start to roll out of the plant until six months or so after startup. But the export market will in no way increase.

Inventories Down: A more encouraging point, on the other hand, concerns inventories. Stocks of carbon black from '56 through '58 were above the 300-million-lbs. level, but were sharply cut back during '59. At the end of October, Bureau of Mines figures showed stocks to be only

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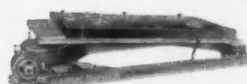
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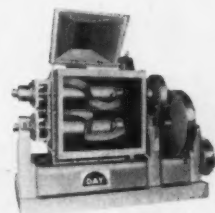
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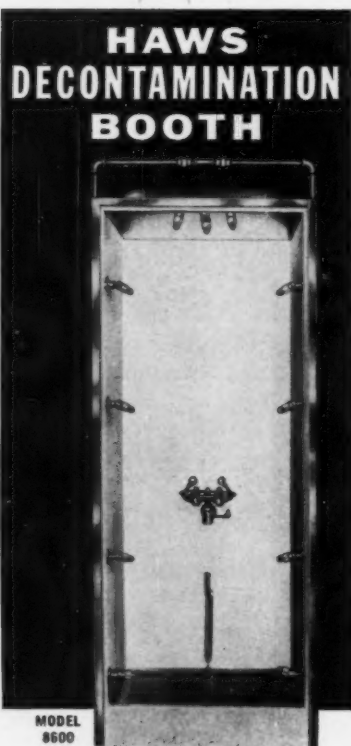
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MARKETS

206 million lbs. Stocks started to drop off in '58, decreasing 48.5 million lbs. from the '57 year-end level. During '59, the drop was even greater, as the industry pared inventories by 95 millions lbs. from the end of '58 to the end of October.

Time to Build? With stocks dwindling, heavy demands for carbon black expected to continue through the '60s, and the industry rapidly approaching capacity, it's clear that producers will need to expand U.S. output potential.

This program is already under way. Continental Carbon Co. brought in a new unit at Ponca City, Okla., early in '59, which will increase capacity by 25 million lbs./year. And a Continental Carbon unit nearing completion at Westlake, La., will add another 25 million lbs./year of capacity when it comes onstream in the next 30-60 days. Phillips Chemical plans to construct a 60-million-lbs./year plant near Orange, Tex., with completion scheduled for third-quarter '60. And Columbian Carbon has started a modernization and expansion program.

These home and foreign expansions indicate that carbon black producers are far from worried about shrinking markets in the next few years. In fact, it looks as if the 3% market growth in '60 will likely be surpassed.

MARKETPLACE

Acrylic Emulsions: Borden Chemical has begun initial production of acrylic emulsions at its new Demopolis, Ala., plant. It's the firm's fourth acrylic emulsions plant. Others are at Leominster, Mass.; Illiopolis, Ill.; Compton, Calif.

Cleaning Products: Shipments headed for the entire Southeastern area started Jan. 4 from the newly expanded plant of Wyandotte Chemical's J. B. Ford Division (Atlanta, Ga.). Products are for dish and bottle washing and building maintenance cleaning, metal cleaning and finishing, commercial laundering, food processing.

Synthetic Resins: National Polychemicals has completed its plant at Conway, N.C. Initial output: phenol and urea formaldehyde for wood-working, textile and paper industries. National is also expanding its Wilmington, Mass., plant.

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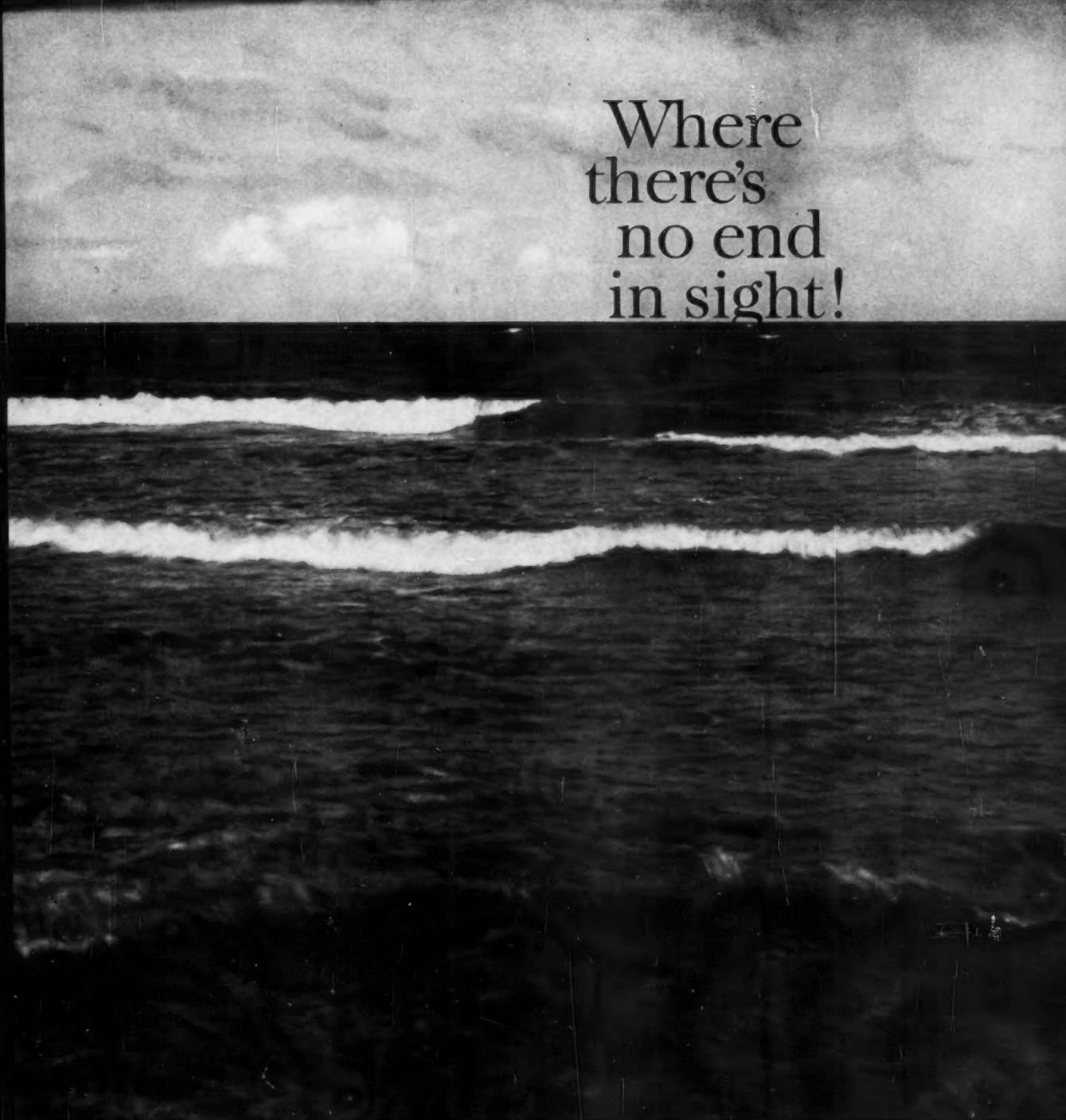


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Newsletter

CHEMICAL WEEK
January 9, 1960

Du Pont openly declared itself in rocket propellant research late last week. It is joining with North American Aviation's Rocketdyne Division in a program to provide "superior storable and high-energy liquid propellents and propulsion systems for the country's missiles and rocket programs." Du Pont's Explosives Dept. will make experimental propellents. Rocketdyne will test them.

Du Pont has been quietly researching the propellents field for some time. The firm has a wealth of background, of course, in double-base propellents (nitrocellulose and nitroglycerine), the field in which Hercules Powder has made the contributions. Du Pont says it has an active program going in solid types. The venture with Rocketdyne, however, will be concerned only with liquids. The reasoning for this: liquids lend themselves more readily to separation of propellant and engine development.

The firm says it has not yet zeroed in on fuel-oxidizer combinations. Certainly fluorine compounds will get careful scrutiny as oxidizers—Du Pont has plenty of know-how in preparation of fluorine compounds, as well as of a host of fuel candidates. Included: Decalin (decahydronaphthalene), which is currently being evaluated as a high-density jet fuel (*CW*, Aug. 22, '59, p. 22).

The emergence of Du Pont as an active participant in propellents just about rounds out the roster of top chemical firms in this field. Carbide previously had revealed it was synthesizing promising liquids and solids. Olin Mathieson, Cyanamid, Monsanto, Allied, Dow and others have been working at varying levels for some time.

•
United Aircraft Corp., also stepping up its rocket research, disclosed last week that it will pump at least \$12 million into its West Coast research and development subsidiary, United Research Corp. (temporarily at Menlo Park, Calif.). The money, to be spent over the next two years, is for work in these fields: advanced, high-performance solid and storable-liquid propellents; improved rocket engine systems; research in thermodynamics, combustion and materials.

A URC official hints that "significant design work" has been accomplished during the past year in both solid and liquid systems. To pursue these promising developments, the company will build two integrated, multimillion-dollar facilities in the San Francisco Bay area—a research and engineering center at Sunnyvale and a development and test center near Coyote for small-scale production and testing of rocket fuels.

•
Newest Atlas missile engine—the MA-3—uses fiber-glass materials in place of some metal components for a weight-saving boost (about 6% more thrust) in both range and payload. The modified system also uses missile fuel to operate auxiliary components (instead of pneu-

Technology

Newsletter

(Continued)

matic or hydraulic units), saving another 15% in number of components. The MA-3 is currently in production at North American Aviation's Rocketdyne Division, is scheduled for early use in operational missiles.

•
A new shrink-resisting treatment for wool, based on the fiber's oxidation in acid solutions, has been developed by Israel's Institute for Fibers and Forest Products (Tel Aviv). The inventor, institute head Menahem Lewin, tells CHEMICAL WEEK that the treatment requires neither special equipment nor skilled labor, can be applied in one step at room temperature to fiber, yarn, knit goods, fabrics, and blends of wool with nylon, Dacron and cotton. Abrasion resistance of yarns is "markedly improved" by the process, according to Lewin. Trials are under way in Britain and Australia. Some European and U.S. chemical and textile companies are also reportedly showing interest.

•
Cane sugar extraction yields have been boosted to 98.8% in pilot-plant runs of a new diffusion process currently under test at Kekaha Sugar Co. (Hawaii). Key: an added dewatering press that squeezes liquids out of waste cane bagasse for return to the diffuser. The modification gives the diffusion process a decided edge over conventional cane-crushing methods, which recover only 94% of the sugar.

Hawaiian Sugar Planters Assn. last week allocated funds to continue the 17-tons/hour pilot operation through July. Harold Silver, president of Silver Engineering Works (Denver builder of the pilot unit), expects that all data necessary for the design of a full-scale diffusion plant will be in hand by the end of the '60 grinding season. Diffusion will be cheaper than crushing, predicts Silver, because power requirements are much lower, maintenance costs vastly reduced.

Chemetron Corp. recently reactivated a diffusion process that has been piloted over two sugar crop seasons in a 150-tons/day plant at Fellsmere Sugar Producers Assn. (Fellsmere, Fla.). J. G. White Engineering (New York), which will supply engineering and construction services to Chemetron licensees, estimates that diffusion will cut initial investment 25%, extraction costs by more than 10%.

•
DuPont will push commercial use of its new Unifog spray process for applying finishing agents to textiles via a new one-year development agreement with Binks Manufacturing Co. (Chicago) and Greenville Steel and Foundry Co., (Greenville, S.C.).

Binks will develop nozzles and control equipment, Greenville Steel will develop and provide textile handling equipment, and Du Pont will furnish the chemical treating agents.

The Unifog method is said to be faster, cheaper, more versatile than conventional padding (dipping cloth then squeezing it between rolls). It's also said to eliminate need for drying equipment in some finishing operations, to reduce waste of chemical treatments and to produce more uniform deposit of finishing agents.



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Emery's recently announced expansion of ozone oxidation facilities will increase several fold total production capacity of pelargonic and azelaic acids.

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How to Up Computer Output

With two- or three-year shakedown periods on electronic computer use now behind them, some chemical companies are developing new ways to bring their systems up to optimum output. Their route to more efficient use: training middle management men to be aware of computer uses and capabilities, and to spot problems in their own job areas that computers might solve.

That's the substance this week of a CHEMICAL WEEK roundup designed to determine how well companies are realizing the possibilities of their "thinking machines."

Two Approaches: CHEMICAL WEEK's interviews with CPI companies that have such training programs indicate two basic approaches:

- **Diffused** — in which selected personnel from each of a company's major divisions are brought together to learn the basics of computer usage, are then charged with disseminating programs throughout each division.

- **Concentrated** — in which each

division is brought through an intensive step-by-step program. This is often done on a staggered schedule so that as one division finishes a step, another is just beginning it.

Typical of such programs, respectively, are Allied Chemical's and Merck's. Both companies, although realizing, of course, that they haven't done all they can, are pleased with results so far. They measure success of their programs in terms of increases in various applications and in the number of work shifts during each day the equipment operates.

Diffused: Allied's diffused programs are run at divisional level by systems managers, coordinated by a director of systems and procedures. The director, in turn, is under supervision of the company's assistant comptroller, Norman Oxley. Each division follows the same general pattern.

In most companies, says Oxley, computer systems men face split interests: they must stir up the apathetic with one hand, while holding down

the eager-beavers with the other. Allied seeks to satisfy both extremes by arousing interest in programs keyed closely to divisional work, but allowing enough latitude within that framework to stimulate imaginative approaches to computer application.

Early Start: At Allied, midmanagement training preceded the actual delivery of equipment. First, key men selected by each division were trained in simple programing and step-by-step analysis of routine problems. This was to give them an idea of what the machines could do. Once this groundwork was laid, each division's systems manager started more formal divisional programs.

The General Chemical Division, for example, carries on a continuing three-part program, under the direction of Systems Manager Robert Moore:

- Internal education in seminars, attended by personnel with parallel job interests, that may uncover specific types of jobs for computers. Seminars also are used as places to discuss new applications, and for the "cross pollination" of ideas among different groups.

- External education in equipment manufacturers' courses and other outside seminars for middle-management.

- Dissemination of information, via standard office communications channels, about what other divisions and companies are doing.

The company's training is directed not only to midmanagement and operating levels but also to top officers, keeping them informed about what's going on in the computer field and on new equipment and applications. Top management also works with simulated problems, will soon participate in "executive gaming" sessions intended to sharpen their wits in hypothetical business situations. Allied also has occasionally made use of equipment manufacturers' help, particularly in the training of computer operators.

As a measure of results, Moore cites the nearly full first-shift schedule of General's computer. He plans to continue midmanagement training because personnel is constantly fluctuating in makeup and needs and because new programs must be worked in and old procedures updated.

Learning By Doing: At Merck, a

ADMINISTRATION

concentrated program has evolved over the past few years that trains midmanagement men in the potential use of computers, with emphasis on applications to their individual jobs.

Two years prior to computer installation, Merck formed a committee called MAPDEV (Merck Application Development Team) to beat the computer drum and help overcome apathy. This team, according to T. K. Torgersen, director of systems and data processing, was composed of operating and management men from all divisions. It did a comprehensive job of preindocination and education and laid the groundwork for systems of data collection that subsequently developed.

Once interest was awakened, the seeds of a midmanagement program planted, and a staff-line relationship established, the efforts of MAPDEV were slackened, and work with one division at a time was emphasized. (MAPDEV was de-emphasized partly to keep from arousing too much enthusiasm before divisional work could get under way effectively.)

Now, following a division-by-division plan, Merck's staff-level Systems Dept. follows a staggered indoctrination schedule. For example, while it makes preliminary reconnaissance studies with one division, it sells another division on a specific program that resulted from a prior reconnaissance. Meanwhile, work for still another division may have progressed to the point where computer projects are being made a permanent part of the operation. The latter step is subdivided, as well, for groups within divisions.

Since data processing is a staff service function, the Systems Dept. finds it must do a job of selling the operating divisions on electronic data processing and computations—a spur to the training program that the company finds helpful. In addition, the influence of MAPDEV is still evident, and the training the committeemen gained is another aid to division selling.

Success Measure: Torgersen's department is happy with results so far. Generally, he feels, middle management men understand the problems and potential of computers. Company-wide use of computers is occurring as rapidly as feasible, and the equipment is now almost ready for three-

shifts/day operation. Eventually, if Merck compresses its shift load by adding equipment, as is planned, additional time may open up for new jobs.

Research Tool: Merck hopes that its research groups will eventually have a bigger slice of the computer's time. Perhaps the use of "second generation" computers will help. Emphasis currently is on production, sales and accounting.

Allied estimates that roughly 25% of its current computer time is for research. And another CPI firm, a drug manufacturer in the New York area, although reluctant to detail its projects, devotes more than 90% of its computer time to research.

Other Companies: CPI firms that have expressed satisfaction with their data-processing equipment and computers generally find that some training of middle-management men has paid off.

Standard Oil Co. of New Jersey, for example, has no formal training program, but through informal midmanagement contact has tried to convey the value of computers. Enjay's petrochemicals division has responded with alacrity to the computer call, has presented corporate computer operators with some extremely sophisticated systems and problems.

Another company reportedly running an effective midmanagement training program is Monsanto Chemical Co. Also reluctant to describe its plan, the firm says only that it's based on a series of seminars. Dow also has a seminar program, based on teaching the fundamentals of computer programming and operation, which it reports has generated at least a dozen new projects for its computer.

Du Pont and Pfizer, on the other hand, see a gap between the computer and operating personnel. They're "doing all right" in this area, they say, but are certain they could do better jobs with more comprehensive training programs.

Apparently training programs can optimize computer operations—and it's a good bet that many more will be appearing, if the experience of those who have tried it is a criterion. The main problem: with a good training program, companies may soon find their computers too small, then have to think about expansion.

Annexation Slowdown

Settlements of the spate of annexation skirmishes along the Texas Gulf Coast are coming. In a hectic few days last month, chemical plants in the area found themselves in a cross-fire between communities bent on securing tax monies represented by plant investments there (CW, Dec. 12, '59, p. 98).

Next week, in Orange, a new city charter becomes effective that will halt that city's annexation steps. The new charter defines an industrial plant that can't be annexed as one that has "as many as 20 regularly employed in-plant workers, not including salesmen, executives or officers." Only way in which such a plant can be annexed is for the owner or owners to petition for such action.

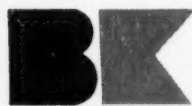
In addition, the exclusion clause applies to land adjacent to the plant buildings and improvements. A plant location—or site—is defined in the new charter as any area for which there are definite plans for the construction of a plant meeting the plant employment definition.

The new charter should ease minds of plant executives along Orange's famed "Chemical Row," who feared annexations by Orange. The "Row" is also protected from involuntary annexation by any other Jefferson County cities by a buffer zone already thrown around the 7,500-acre area by Orange.

Elsewhere: In Beaumont's Golden Triangle area, councilmen of Port Neches-Texas City and five chemical firms have signed a five-year interim contract that will bring the city an additional \$100,000 in taxes annually. Plants included are Goodrich-Gulf Chemicals Inc., Texaco, Inc., Texas-U.S. Chemical Co., Neches Butane Products Co., Jefferson Chemical Co.

First payment is due Jan. 31, and the second on Oct. 1, '60. Individual company amounts will be determined on a proportional basis from the total valuation shown on county tax rolls.

Port Neches will amend its annexation ordinance of October to exclude all of the five plants from its annexed areas, excepting those portions of each installation required to provide a collective tax return of \$100,000 annually. The tax rate will be \$1.80 on each \$100 valuation on taxable portions in each plant.



Western Chemicals Ltd. upgrades caustic output with Canada's first D-H purification plant

At Duvernay, Alberta, Blaw-Knox designed and constructed for Western Chemicals Ltd. a new plant to purify diaphragm cell caustic soda. Utilizing Columbia-Southern's D-H process for the removal of sodium chloride and sodium chlorate, the plant will be capable of purifying 50 tons per day. Backed by extensive caustic plant experience Blaw-Knox worked closely with Western Chemicals Ltd. and Columbia-Southern Chemical Corporation. This teamwork produced a plant economical to construct and efficient to operate. To improve the marketability of your diaphragm cell caustic, contact Blaw-Knox headquarters in Pittsburgh, Pennsylvania. Branch offices in New York; Haddon Heights, New Jersey; Washington, D.C.; Birmingham; Chicago; and San Francisco.

CHEMICAL PLANTS DIVISION

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Specific Gravity	
Liquid—23.7°C/4°.....	1.00
20°C/4°.....	.92
Gas 0°C, 1 atmos.....	1.74
Boiling Point °C, 760 mm.....	-23.76
°F, 760 mm.....	-10.76
Refractive Index, n _D ²⁰ /D	
Liquid—23.7°C.....	1.3712
Gas 25°C.....	1.000703
Solubility (in cc.) of Methyl Chloride Gas in 100 cc. of solvent (20°C, 760 mm)	
Water.....	303
Benzene.....	4723
Carbon Tetrachloride.....	3756
Glacial Acetic Acid.....	3679
Ethanol.....	3740

ANSUL CHEMICAL COMPANY • MARINETTE, WISCONSIN

ADMINISTRATION

New OCAW Strategy

Following up intentions proclaimed and endorsed at its annual convention last October, the Oil, Chemical & Atomic Workers Union has streamlined its organizing efforts, to concentrate programs at over a score of "significant locations." The program is under the union's newly formed Organizing Dept., may signal new and intense drives at other major chemical installations.

OCAW has singled out for special attention "more than 20" projects, significant because "they involve comparatively large groups of people in strategically important oil and chemical installations." The union would not reveal the locations of these plants.

E. Carl Mattern, OCAW's newly appointed director of organization, says: "In addition, many other smaller and less significant projects are under way."

Mattern describes reasons for the concentrated drive this way: "The union has had so many organizing projects going at once that we have been spread too thin. Our first step in setting up a coordinated drive has been a regrouping of our forces. We have begun to move organizers about . . . to beef up the significant projects."

According to OCAW, the direction of the individual projects is being gradually shifted from jurisdiction of district directors to the new director of organizing.

In general, however, OCAW officials say, Mattern is now supervising the major projects while district directors continue with the minor projects that were under way when the new Organizing Dept. was set up.

LEGAL

Fish Fine: Stauffer Chemical Co. must pay for 2,000 striped bass—\$13,369 in damages plus court costs. That's the jury's verdict following a six-week trial of charges brought against the company by California's Fish and Game Dept.

The company acknowledged dumping at least 25 tons of acid each month into San Francisco Bay, in addition to other wastes.

Although the state had charged the company with responsibility for the loss of the fish, company offi-

cials held that some discharge other than its own was more probably responsible for the kill.

Long-term waste discharge requirements for the Stauffer plant are currently being considered by the San Francisco Bay regional pollution-control board.

Soap Suit: Robert Lee Moore, president of Mutual Chemical & Supply Co. (Columbus, O.), has been indicted by a Madison County grand jury at London, O., on two charges of defrauding the state. The suit alleges that Moore substituted a cheaper brand of chemicals for the brand he exhibited in bidding for a state contract. The order consisted of 30,000 lbs. of phosphates for soap-making, delivered to a prison farm.

Stake in Indemnity: Companies can get caught in an irritating squeeze when their insurance programs are not crystal clear. It took the district court in St. Louis to determine which of two carriers was liable for \$4.4-million damages resulting from an explosion at Monsanto's Nitro, W. Va., plant.

Because of the limits of coverage, Continental Insurance Co. insured Monsanto's plant for fire and Hartford Steam Boiler Inspection and Insurance Co. held the boiler and machinery policy. Although all parties agreed to the amount of damage, each insurer claimed the other was liable. Judgment was against Continental, because of circumstances of the explosion.

LABOR

OM Vote: At its Saltville, Va., chlorine plant, employees of the Olin Mathieson Chemical Corp. voted to abandon their independent Saltville-Mathieson Employees Assn. and join the ranks of District 50, United Mine Workers. Unofficial results: 562 votes for UMW, 495 votes for the independent, 20 votes for no union. The union will represent about 1,100 production and maintenance employees. The independent union has represented the employees there for about 22 years.

Rubber Raises: Members of independent Neoprene Craftsmen Union at Du Pont's Louisville, Ky., neoprene

Have you
stopped
learning?



One of the greatest of all British statesmen, it is said, read all of Gibbons' "Decline and Fall of the Roman Empire" in the time intervals of waiting for his wife to dress for dinner.

Once a busy man feels the urgency to learn — and to keep learning — it's remarkable how he somehow manages to find the time and place to do it.

Today, in business and industry, ignorance is the most extravagant bliss anyone can pretend to enjoy. And startlingly enough, it is only when a man really starts to read that he realizes how much there is to learn . . . how fantastically fast the world is moving . . . the supersonic speed of engineering and technology . . . and that just to keep pace with his present job, he must read regularly and well.

If he had to spend countless hours seeking out that which would be most useful in his work, the going might be rough. But, happily, this herculean task has already been accomplished . . . and conspicuously well by McGraw-Hill specialized magazines that span almost every field and function.

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Swift's Epoxol 7-4 is a new poly-epoxide containing on the average over four reactive epoxide groups per molecule. Not only is it highly reactive but it is highly compatible with many types of resins as well.

The table above indicates the polymerization reactions that can be carried out with Epoxol 7-4 alone, or in combination with other resins plus additional reactions.

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Specifications EPOXOL 7-4

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Oxirane Oxygen	7.0% Min.
Iodine Value	2 Max.
Gardner Color	Less than 1
Gardner Viscosity	0 Max.
25°C/25°C	(3.4-3.7 poises)
Saponification No.	180 Max.
Acid No.	0.20 Max.
% Conversion to Oxirane Oxygen	94% Min.*
Absorptivity @ 2.9 Microns (Corrected for Background)	0.01 Max.
Specific Gravity 25°C/25°C	0.990-0.995

*Ratio of epoxidation to total oxidation x 100.



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TP-4

ADMINISTRATION

plant accepted a company offer of 4-5¢/hour pay raises. The raises, affecting some 1,350 workers, came under a wage-reopening provision of a contract that runs until April '61, brings wages to minimum \$2.23/hour, maximum \$3.11.

Synthetic Hike: In another rubber plant settlement, 120 craft workers, represented by Local 423, United Rubber Workers at American Synthetic Rubber Corp.'s Louisville plant, agreed to a 6¢/hour wage boost and a 3¢/hour cost-of-living pay increase in the first year of a three-year pact. The contract is retroactive to Nov. 1, calls for increases of 6¢/hour in its second and third years. Negotiations are still under way with plant production workers.

Texas City Strike: Prospects of settlement of the six-month-old strike by Oil, Chemical & Atomic Workers at American Oil Co.'s Texas City, Tex., plant are still dim, according to latest reports. Meanwhile, about 35 workers have returned to work, in the face of actions such as the shotgun blasts that broke a window in one man's house. He is a defendant in a suit by OCAW asking \$10,000 from him and 13 other nonstrikers, claiming they defamed the union's reputation.

Labor Abroad: Following the lead of other chemical processors, Britain's largest glass maker, Pilkington Brothers, Ltd., is reducing the work week for its operators—without pay loss—from 45 to 43 hours. Recently, Imperial Chemical Industries Ltd. reduced hours for 70,000 of its workers from 44 to 42. Pilkington's move affects 13,000 employees in six plants and was made in agreement with the National Union of General and Municipal Workers.

Striking Complaint: Strikebound plants operating sufficiently to make deliveries on government contracts may lose that market if complaints by the Oil, Chemical & Atomic Workers Union get favorable hearings. The Defense Dept. has reportedly agreed to investigate charges by OCAW that Defense is acting as a strikebreaker in receiving jet fuel shipments from a struck Standard Oil Co. of Indiana plant being run by supervisory personnel.

KEY CHANGES

John A. Parsons to president and **Elmer G. Smith** to executive vice-president, American Plastics Corp., subsidiary of Heyden Newport Chemical Corp. (New York).

John W. Hall to president, Potash Co. of America (Washington, D.C.).

Lawrence Litchfield, Jr., to board of directors, Aluminum Co. of America (Pittsburgh).

Donald G. Patterson to vice-president, plastics, Reichhold Chemicals, Inc. (White Plains, N.Y.).

J. A. Quinn to vice-president, Wymat Chemical Corp. (Kearny, N.J.).

William O. Blesse to vice-president, manufacturing, Century Chemical Corp. (New York).

Frank L. Cohen to vice-president, operations, Merck Chemical Division, Merck & Co., Inc. (Rahway, N.J.).

Harold W. Fleming and **John S. Cromeans** to vice-presidents, Catalysts and Chemicals, Inc. (Louisville, Ky.).

Rush F. McLeary to vice-president, research and development, Jefferson Chemical Co. (Houston, Tex.).

Robert W. Cairns to board of directors, Hercules Powder Co. (Wilmington, Del.).

Hal A. Kroeger to board of directors, Hooker Chemical Corp. (Niagara Falls, N.Y.).

H. Wymore to vice-president, **N. Boylon** and **B. Edwards** to assistant vice-presidents, Crown Zellerbach Corp. (San Francisco).

James E. Duffy, III, to treasurer, Dewey and Almy Chemical Div., W. R. Grace & Co. (Cambridge, Mass.).

Edwin S. Flinn to executive vice-president, acting as chief executive officer, following retirement of President **Edward A. Sitzler**, Hurlbut Paper Co., subsidiary of The Mead Corp. (Dayton).

Paul A. Ketchum and **Howard J. Mather** to vice-presidents, Pittsburgh Plate Glass Co. (Pittsburgh).

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*Vitel, Videne—T.M.s., The Goodyear Tire & Rubber Company, Akron, Ohio

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"Technological progress which now permits, for the first time, 'tailoring' of epoxy plastic resins to specific needs promises to accelerate the growth of these previously limited plastic materials" — *The Journal of Commerce* (italics ours).

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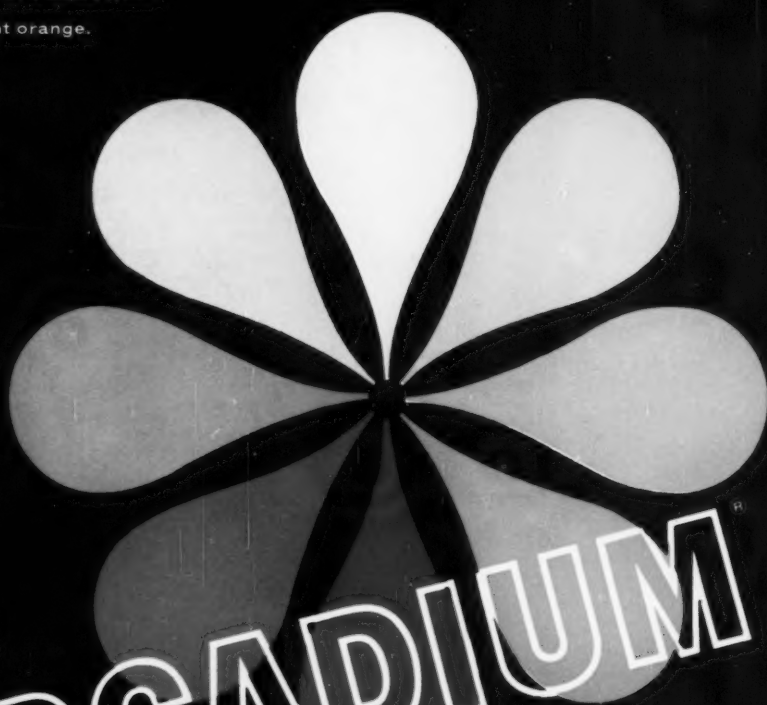
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Sodium Pentachlorophenate • Sulfuric Acid • Methanol



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Market Newsletter

CHEMICAL WEEK

January 9, 1960

U. S. consumption of sulfur recovered from its two-year decline, to set a new record in '59, according to Langbourne Williams, chairman of Freeport Sulphur Co. His preliminary estimates are that consumption of sulfur in all forms was about 6 million long tons—an increase of 10% over '58, and 200,000 long tons over the record set in '56.

Total sulfur production will be about 85,000 long tons over '58—hit an estimated 6.2 million long tons for '59. Stockpiles were cut back from 4 million tons to 3.4 million tons during the year.

Despite strong competition from foreign markets, sulfur exports rose to near-record levels—more than 1.6 million tons for the year.

Total imports—including Frasch from Mexico, recovered sulfur and pyrites-derived material from Canada—will about equal the 755,000 tons imported in '58, Williams said.

Of the total production, about 4.5 million tons were Frasch sulfur from Louisiana and Texas, 740,000 tons were elemental sulfur recovered from refinery gases and sour natural gas; 450,000 tons were from pyrites; and 510,000 tons from other sources.

Meanwhile, worldwide sulfur consumption rose to a new high of about 16 million tons, compared with 15.3 million tons in the '58 report, says Fred M. Nelson, Texas Gulf Sulphur board chairman. And he points out that total world consumption will likely increase 5% more in '60.

New sulfur supplies from Mexico (1 million tons/year) and France (½ million tons/year), plus rapidly growing tonnages from Canada, have come into the market in recent years. As a result, '59 was a year of intense price competition.

Nelson points out foreign sales in the U.S. have also been aided by low freight rates on foreign flag ships, although some firming of foreign rates was noted at year end.

An explosion crippled production at Ansul Chemical Co.'s plant at Marinette, Wis. Output of four glycol diethers, hydroxy anisole, pyrrolidine and ortho-anisaldehyde was stopped by the blast. The company reports that it will still be able to supply customers for another month or two from existing inventory, and by producing some products at other parts of the plant. The company is now looking for other sources of material, should the delay be extended, but it hopes to restore production around March.

The Southwest will have more high-purity liquid oxygen. A new plant was brought in by National Cylinder Gas Division of Chemetron Corp. It also makes high-purity liquid nitrogen and argon, is located at the site of existing NCG facilities at Dallas, Tex., where the company produces oxygen, nitrogen and acetylene gases.

Market Newsletter

(Continued)

More British carbon black will be released for European markets in '60, with the recent completion of Australia's first carbon black facilities (see p. 18). The new 30-million-lbs./year unit will be able to supply all of Australia's current requirements. Demands are met now by imports from Great Britain. This will mean that U.S. producers will have tougher competition from England in selling to world markets.

The U.S.S.R. won't be using rubber on the world market in the next few months. It will use 30,000-50,000 tons of rubber from its stockpiles during the first quarter of '60, according to a member of the Russian trade delegation in London last week. Distribution will be made only to users inside the U.S.S.R., and not to Communist China or eastern European countries, as had previously been reported.

London sources believe that one purpose of the Soviet move is to get the world rubber price lower before purchasing in world markets again. The Russian official hinted at this reason, commenting that Russia was dissatisfied with the current price. However, he added that the Soviet Union also plans to hike its output of synthetic rubber during the next few years, which might mean a reduction in consumption of natural rubber by the U.S.S.R.

Recent heavy purchase of natural rubber by the Soviets was one factor in boosting world rubber prices. The amount of stockpiled rubber held by Russia is unknown. But if it can live on inventory through much of the year, this would exert a downward pressure on rubber prices.

Many U.S. rubber industry sources see the Russian move as an indication that Soviet officials no longer consider a rubber stockpile as essential as it once was.

As Firestone's director of rubber purchases, J. C. Roberts, put it: "With the development of the new synthetics, you don't need a natural rubber stockpile."

Sohio Chemical is preparing to start production at its new acetonitrile-acrylonitrile plant at Lima, O., and has posted a price schedule for acetonitrile. Tank-car tabs are 32¢/lb. east of Idaho, Utah, Arizona, and 34.5¢/lb. in the West. Higher prices apply to smaller quantities.

SELECTED PRICE CHANGES—Week Ending January 4, 1960

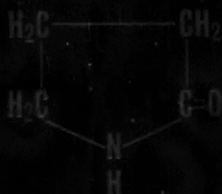
	Change	New Price
UP		
Benzene, nitration, tks., wks.	\$0.03	\$0.34
n-Butyl alcohol, synthetic, tks., dlvd.	0.005	0.155
m-Nitrotoluene, tech., dms., frt. alld.	0.05	0.50
m-Toluidine, tks., wks., frt. alld.	0.04	0.82
DOWN		
Furfuryl alcohol, dms., c.l.	0.01	0.205

All prices per pound unless quantity is quoted.

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Chemical Week Report

Long-Range Planning

by Bruce Payne

How many companies will realize the full potential of their opportunities in the boom decades ahead (see right)? This CW Report offers an insight into how 60 chemical companies are preparing for long-range growth.

By decentralizing responsibility, top management has successfully delegated many operational functions—e.g., sales, production, product development—to lower-echelon management. But there's one key function it can never delegate without first abdicating the crown of corporate leadership. That function is long-range planning (LRP), top management's prime responsibility.

This much, and more, was confirmed by CHEMICAL WEEK's latest industry-wide survey, conducted in co-operation with Bruce Payne & Associates, New York management consultant firm. Sixty chief executives (or delegates) out of 240 queried by CW answered a detailed four-page questionnaire on long-range planning. This healthy 25% response is significant in that it underscores a widespread and growing interest in LRP in the chemical industries—a fact confirmed by face-to-face interviews.

What did the survey look like? Sample pages appear on pps. 80-83; answers included therein are "composites" derived by qualitative and quantitative analysis of the replies. These fictional but representative re-

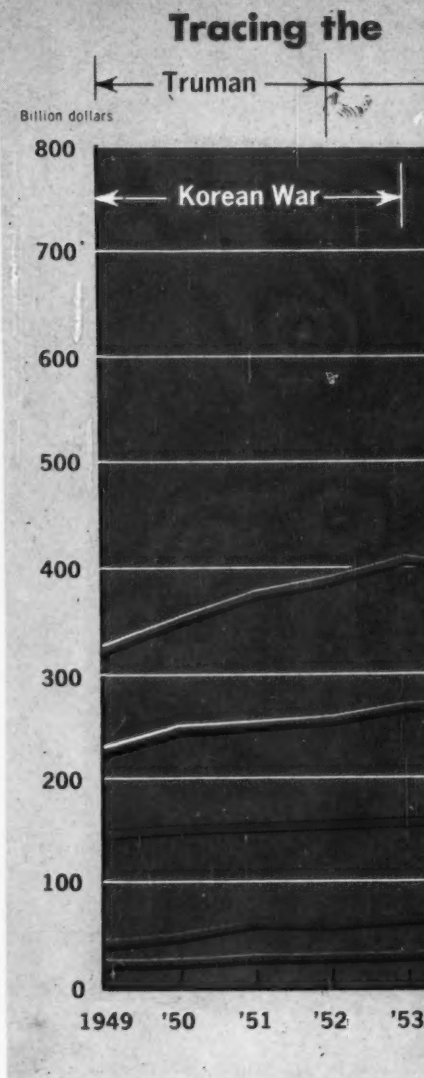
sponses—like any capsule summary of a complex survey—reflect average company performance. For this reason, individual company performance should not be measured against them, especially since long-range plans must be tailored for each company.

On the other hand, the survey speaks for the entire chemical industry, including as it does the views and practices of companies whose aggregate annual sales amount to some \$15 billion. That's roughly 60% of the chemical and allied products industries' current annual sales.

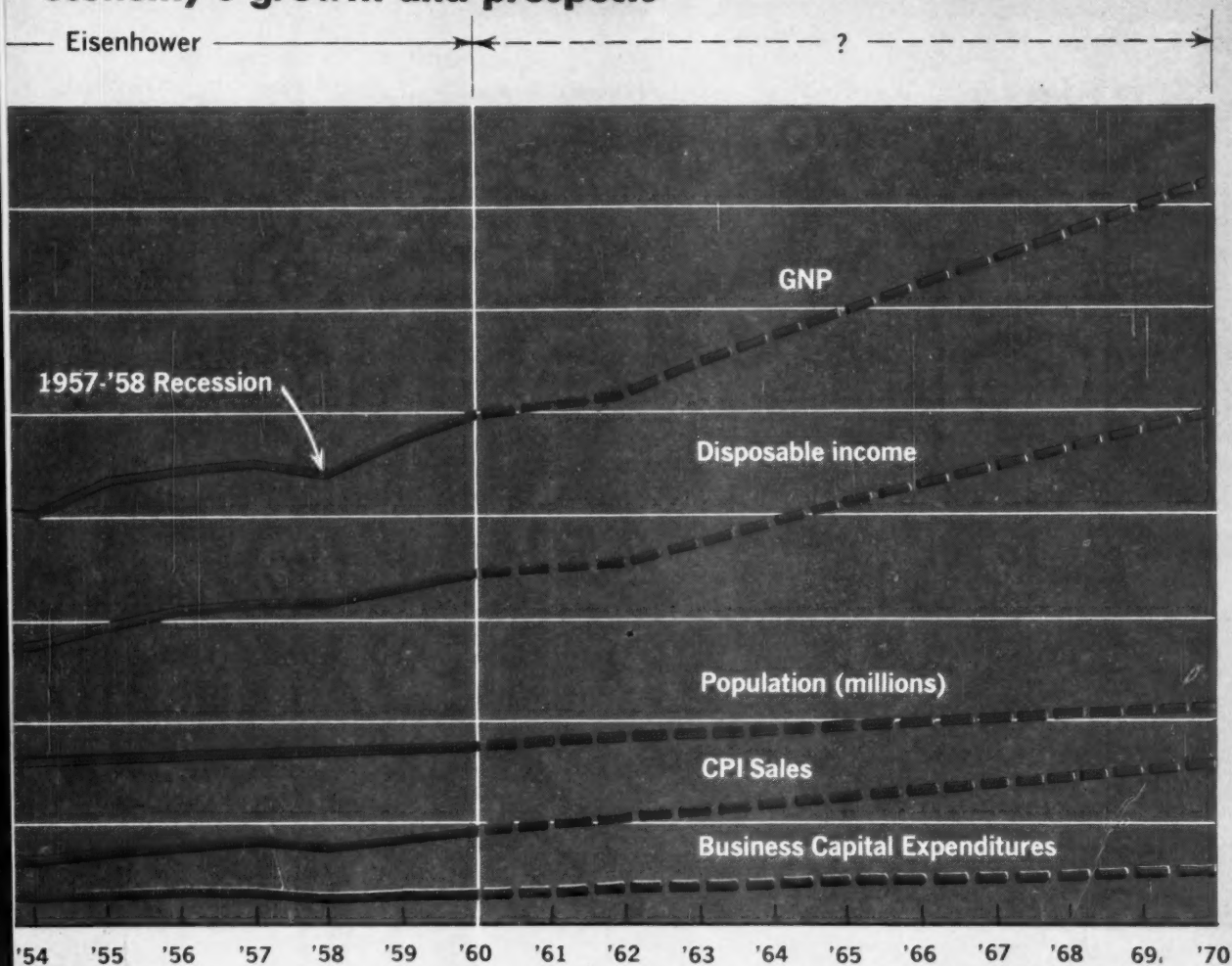
Surveyed companies range in size from giants like Du Pont, Union Carbide, American Cyanamid and Allied Chemical—each with \$500 million/year, or more, sales—to smaller firms like Diamond Crystal Salt, Oakite Products and Dearborn Chemical—with \$10-20-million/year sales apiece.

Five Major Findings: What did the pulse-taking reveal?

One observation confirmed by the findings: Only within the past five years has long-range planning been



economy's growth and prospects



recognized in most chemical companies as a separate function—93% of the respondents say they have definite long-range programs; 65% say they initiated their present programs between 1954 and 1958; about half of these give 1956 as starting date. A few plans go back as far as 1948 (Du Pont, Union Carbide and Hooker were some of the LRP pioneers), but these are exceptions to the general rule.

Behind LRP Interest: What's behind growing interest in a comprehensive approach to long-term growth?

The answer lies in the chemical industry's phenomenal post-World War II growth. Many nonchemical companies, attracted by the prospects of hefty profits and rapid growth, organized and acquired chemical ventures. And established chemical companies grew by leaps and bounds—adding new arms by merger, acquisition, integration and diversification.

Result, in many cases, has been a shift in planning responsibility to divisional and functional management—at the expense of top management authority and control. The need arose for a new function—long-range

planning—to restore central planning responsibility to top management.

Heightening international competition for markets, processes and products, as well as growing markets overseas, have intensified the need for long-range planning.

No Single Definition: Since the LRP function is so new, no commonly accepted definition has yet evolved for it.

Top managers, practically without exception, are always deeply involved in all kinds of planning: commercial, economic and process development planning, economic forecasting, management development planning, market research planning, institutional public relations planning, for example.

Individually, these activities do not fulfill the total concept of long-range planning. Neither do production, research, or sales and distribution planning. By the same token, specific forecasts and projections do not qualify.

What then is long-range planning? LRP is the whole

Chemical Week's LRP Survey

Ground rules: 1. We won't quote you, unless you want us to. However, we would like you to sign our survey to make interview follow-up easier.

2. We don't expect you to make extensive calculations, nor to reveal confidential information. Your impressions, when combined with those of others, will help us explore the subject in depth.

3. Please check one. Your company's annual sales are
☐ less than \$20 million; ☒ \$21-\$50 million;
☐ \$101-\$200 million; ☐ \$201-\$500 million;
☐ \$501 million and above.

1. Does your company have a long-range planning program? (☒) Yes () No

2. If "Yes", what is it called? (☒) Long-Range Planning

() Long-Term Planning () Corporate Planning () Other

3. Who in your company has the responsibility for this planning activity?

() Board of Directors only

() Top executive only

(☒) Top executives as a group

() Planning committee

() Planning department

() _____

4. If a Planning committee or department has the responsibility, indicate the name of the group, the title of its chairman and its membership.

Name Executive Committee

Title of chairman President

Membership Officers of company

5. When was this group given the responsibility for LRP? 1956

How LRP thinking currently shapes up in the chemical industries is shown here and on the following three pages. These "composite" answers to CHEMICAL WEEK's industry-wide LRP survey were derived by qualitative and quantitative analysis of replies of 60 companies—a sample representing \$15 billion worth of sales.

package—over-all coordination of all planning functions. Goal: the allocation of resources, the choice of objectives and alternatives—i.e., a master plan to further a company's preferred long-term goals. Such a far-reaching plan helps management determine how the company can maximize its strengths, minimize weaknesses. It provides top executives with established standards for evaluating company performance in response to situations confronting the company. While LRP cannot be used to forecast problems and opportunities, it can make the difference between success and failure in adjusting to these demands.

LRP is the difference between planned and haphazard growth. Admittedly, a helter-skelter approach to planning has worked for some companies in the past. But the chances of history repeating in the chemical industry are steadily worsening. That management recognizes this is borne out by the survey.

Top Management's Charge: CHEMICAL WEEK found that companies with LRP programs normally involve their entire central corporate management in this ac-

tivity—70% of the respondents say they hold top administrative executives responsible as a group for planning. The remainder was about evenly divided: in one faction, a small executive group (plus directors of planning, research and budget) handles LRP; the other relies on a small committee chosen from very top management.

In almost every instance, the chief executive's role was crystal clear: he's the undisputed head of the long-range planning committee, except in those cases where he delegates this role to his chief-of-staff or an assistant. In no case was the board of directors or the chief executive solely responsible for LRP.

Goal Setting Important: The survey shows that most long-range planners cite "profits" as the single most important corporate goal. A smaller group expresses corporate goals in terms of sales or marketing targets, identifies commercial product development as the talisman of growth.

Revealing on this score are the names of company long-range programs. While 75% of the respondents

Forecasting sales five years ahead is now the general rule in chemical company long-range planning, the survey reveals. Minimum sales increase anticipated: 10%/year. Rising sales, however, aren't enough to guarantee a company's long-term future. A better indication of future profits is an increasing share of a growing market.

Long-Range Marketing Plans

1. What areas do your long-range marketing plans cover? (☒) Sales
(☒) Distribution (☒) Advertising
2. How far ahead do you forecast sales? () One Year () Two Years
(☒) Five Years () Ten Years () Longer
3. What has been your company's average annual sales trend over the past five years?
Increase: 5% 7% 10% 15% ☒ 20%
Decrease: ☒ 5%
4. What is your company's anticipated average annual sales trend over the next five years?
Increase: 5% 7% 10% 15% ☒ 20%
Decrease: ☒ 5%
5. What proportion of your current sales are domestic? 93% and foreign 7%
6. Will you introduce new products and have you planned for them? (☒) Yes () No
1960: () 1 new product
() 2 new products
(☒) 3 new products
(☒) a complete new line in addition to present lines
1964: () 1 new product
() 2 new products
() 3 new products
(☒) a complete new line in addition to present lines
1969: () 1 new product
() 2 new products
() 3 new products
() a complete new line in addition to present lines P
7. What is the percentage breakdown of your production for industrial uses almost 100% ?; for military uses negligible ?

call their LRP blueprints simply "Long-Range Planning Program" or "Corporate Planning Program," some 25% prefer to focus on a particular goal.

For example, Merck and Glidden call their programs "Profit Planning" and "Future Profits Planning," respectively. Hooker calls it "Forward Planning." Other selected names are: "Growth Plan," "Ten-Year Profit Plan," "At Least Plan."

Longer-Range Sales Planning

In over 80% of companies reporting, five-year sales forecasts are the cornerstone of long-range market planning—a clear indication that short-range planning is giving way to longer-range thinking in the sales area. In some 12% of the larger companies, 10-, 15- and even 20-year sales projections are employed as long-range planning tools to complement five-year forecasts.

As many as 5% of the respondents (in this particular case mostly smaller companies with less than \$50-million/year sales) conduct their "long-range" market planning with no more than two-year sales forecasts.

Reasons: small, rapidly growing companies expect new products to have a dynamic effect on their sales volume. Hence, management is reluctant to predict sales beyond two years on the basis of present products and production facilities.

Sales trends of companies responding to the questionnaire range from a 5% decrease to more than a 100% increase over the past five years. The average (median) increase is 15%/year; the mode is 10%/year.

As far as sales projections are concerned, the survey shows that a 10% annual growth rate is favored over the next five years. Three possible reasons explain why companies will settle on a 10% annual sales increase: (1) a reasonable commitment to growth; (2) a desirable commitment to growth; (3) not so major a commitment as to require drastic overhauling of production and marketing operations.

For much these same reasons, 10% annual increases appear in a wide variety of other long-range projections (e.g., capital equipment expenditures, research and development spending). That's because the level of ex-

Long-Range Capital Spending Plans

1. How much have you budgeted for plant additions:

In 1960 10% above 1959
 Within five years 5 years total between 3-4 times 1960 level
 Within ten years ?

2. What specific plans do these investments cover?

(☒) Production expansion (☒) Modernization
 (☒) Geographic expansion (☒) Diversification

3. What are your plans for overseas expansion over the next five years?

Manufacturing abroad: Europe or South America

4. What percentage of your research budget is devoted to the following areas:

20 New products; New uses of by-products; 40 Production improvements;
40 Product improvements; Other

5. What is your projected research budget?

1960: Increase %	1964: Increase %
10% <input checked="" type="checkbox"/>	10% <u> </u>
15% <u> </u>	15% <u> </u>
more <u> </u>	more <input checked="" type="checkbox"/>
1969: Increase %	
10% <u> </u>	
15% <u> </u>	
more <u> </u>	<u>?</u>

Long-Range Financial Plans

1. Will your long-range plans be financed from (☒) earnings; (☒) borrowings;
 () equity financing; () combination? largely some

Long-range capital spending plans involving production and research look ahead 5, 10, even 20 years. Here's the chemical industries' composite viewpoint on capital spending, as monitored by CW's survey of 60 companies.

penditures must be determined by management fiat in areas where specific projections are not available. In such cases, 10% growth serves well as a minimum planning base until more specific information becomes available.

Capital Commitments Conservative

While individual company managements generally feel bullish about long-range prospects, their answers to questions on long-term commitments of capital resources for expansion and research do not necessarily reflect their optimism.

For example, average plant investments (for production and geographic expansions, modernization and diversification) figure out to a scant 10% increase in 1960 over '59 expenditures; 1961-65 plant expenditures are expected to total between three and four times the '60 outlays.

Surprisingly, only a handful of respondents have evaluated capital-expenditure trends in their own companies as far as 10 years ahead, despite the fact that

commitments like these are usually made on a three-year, five-year, or 10-year basis.

Similarly, 1969 changes in research expenditures were not available in most cases; 1960 and '64 trends, however, were (see model questionnaire above).

What accounts for these companies' failure to make long-range forecasts of capital expenditures, especially for plant development? The most common cause is that management has not yet made its selection of alternative proposals.

For all this, the chemical industry is fortunate in having far-longer-term projections and forecasts of capital expenditures than many other basic U.S. industries. Besides—unlike companies in many other industries—chemical companies have access to information concerning competitors' capacities, prices, intentions, processes, etc. If 95% of this known information is carefully evaluated, the effect of the unknown 5% may be fairly well discounted.

This isn't the way chemical management people generally think, however. They seem to believe that

Personnel is a danger spot revealed by the LRP survey. Judging from the responses, few companies in the chemical industries have any idea what their manpower requirements—technical and otherwise—will be in five years.

Long-Range Personnel Plans

1. How many people do you expect to employ over: the next five years _____? ^P
the next ten years _____?
2. What percentage of these will be technically trained: five years from ^P
now _____; ten years from now _____?
3. Does your company have a detailed written personnel development program under which it now operates? () Yes (☒) No
4. Does this program include a five-year personnel requirement forecast for the different categories of people you employ? () Yes (☒) No

Any further comments you might like to make regarding long-range planning

We'd like to see what others say

Your name: *Bob Stevens*
Your title: *Executive Vice Pres.*
Your company: *Rescorla Chemical Co.*

You may (), May not () quote me.

competitors hold some magic touchstone to success which is not available to them. At its worst, the over-all effect of this specious reasoning is to promote a dangerous kind of follow-the-leader philosophy, which has already caused overcrowding in several fields.

Presumably, all chemical firms should have access to more or less the same cost data, market statistics, price structure, capacity figures, etc. If, in spite of this, too many contenders enter a promising field, the end result is that none of them can expect to make the money they thought they saw in the new venture.

But even in retrospect, it would be unjustified to say that this company or that one was wrong in making the choice—or that they were all wrong. It's clear that if no more than a handful actually take the step, capital resources and profits will be preserved.

Foreign emphasis: The survey shows chemical companies are giving more weight to foreign competition and overseas opportunities in their planning.

Respondents say that foreign sales accounted for up to 35% of their total sales; the median works out to

7%. In larger companies (sales over \$100 million/year), foreign sales ranged from 4% to 28% of total sales; the median was again 7%.

Judging from the returns, lively interest in foreign developments is being displayed by larger chemical firms determined to strengthen and broaden existing ties to overseas markets. Many state that, within the next five years, they plan to manufacture abroad. Favored areas: South America and western Europe.

On international economic forecasts, planners are basing broadly conceived strategies to: (1) meet stepped-up foreign competition at home; (2) capitalize on promising investment opportunities overseas.

Some Problem Areas Bared

Some apparent problem areas were turned up by the survey. One of these (long-range personnel requirements) appears to be an implicit problem—because of lack of information or plans.

Only 25% of the respondents say they have analyzed personnel requirements as far ahead as five years. The

CW Report

few respondents voicing opinions tend to assume that the ratio of technically trained personnel to total manpower requirements would remain constant in the foreseeable future.

These figures, skimpy as they are, suggest: (1) impact of increased automation on future personnel requirements has not yet hit home in many companies; (2) executives place scant reliance on the findings and recommendations of manpower and social science researchers.

Other Anomalies: Face-to-face interviews with some respondents reveal apparent anomalies. In one case, for instance, a large chemical company staff officer, deeply involved in shaping and implementing his firm's 15-year LRP program, says:

"Of course we have an economics department, but we feel there are areas where business judgment outweighs an academic approach to forecasting. Our economists are excellent when it comes to explaining past happenings or making predictions for the immediate future. But, when we deal with projects affecting periods beyond the limits of statistical confidence, we feel the seasoned judgment of top managers outweighs the opinions of our specialists."

Is he wrong to downgrade the role of the specialist in LRP? The answer is no. Some aspects of LRP, by nature, are in such far-flung areas of business and economics forecasting that management's judgment almost always supersedes statistical projections, even when these are available.

Moreover, the continuing interplay between LRP and day-by-day decision-making makes it mandatory that managers temper the opinions of specialists with their own expert knowledge of the economic, technological and market conditions in any particular business situation.

Communicating Objectives: Two top officers of different companies independently hit on another sore spot in LRP: the difficulty of communicating long-range objectives in decentralized companies.

Says one: "We are confident that our division heads will not miss any bets in the areas they're responsible for, but we can never be sure that they're looking at brand-new fields—the kind of thing top management continuously keeps its mind on."

The other says: "We spend time making sure that second-echelon management understands that our future is not tied to areas we have already planned for. We're not completely convinced, however, that an understanding of this feeling goes as far down in our organization as it should."

If these comments prove anything, it's that long-range planning cannot be conducted in a vacuum, by



Meet the Author

Bruce Payne, a specialist in corporate long-range planning, is president of Bruce Payne & Associates, Inc., management consultant firm. His company's activities range through all phases of business, as well as a broad swath of geography; the firm and its affiliates have done work in Canada, Europe, South America, the Caribbean area and, of course, the U.S. Payne has lectured at Harvard Business School, Western Reserve University, John Carroll University, and has written for *Business Week*, *The Harvard Business Review* and *The Christian Science Monitor*. He's an alumnus of the University of California and Harvard Business School.

casual conversation around the conference table. It makes new demands on many departments and corporate heads; it underscores the danger that short-range planning may lull all management echelons into believing they're planning long-range.

Challenge and Reward

The need to systematize long-range planning, implement and disseminate LRP objectives exists in most companies. Only by long-range planning can companies maximize their growth.

When top management is freed from daily concern with implementing decisions already reached, it is best prepared to cope with the challenge and to gather the rewards of long-range planning.

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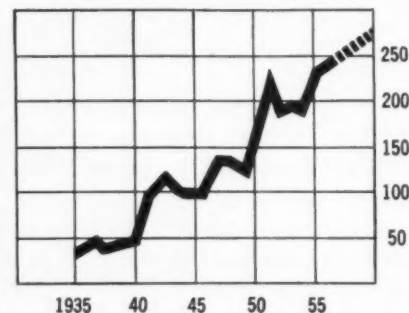
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G60-1

SPECIALTIES

Turnabout in German Food Additives Law

THEN

The basic German food law (passed in '36, amended in '43) prohibited the manufacture or sale of food products harmful to health. The burden of providing harmfulness rested with the government.

NOW

Under the new revised law, no chemical substances may be added to or applied to the surface of foodstuffs unless authorized. Burden of proof of safety is on the processor or on the exporter to Germany.

How to Live with 'Das Lebensmittelrecht'

A new West German food law called the *Lebensmittelrecht** has caused some careful checking and a bit of worrying by U.S. citrus exporters and agricultural chemical makers. The *Lebensmittelrecht* is a tighter, tougher food additives law, and its first sections went into effect just two weeks ago.

After five years in the process of revising their law, the Germans now have an additives measure similar to the U.S.'s—but it's stricter. Two basic differences between the old and new laws, as they affect U.S. companies: (1) the Germans now have developed a "positive list" of additives approved for use; any additives not on the list are prohibited, (2) the burden of proof that goods are safe for consumption is now on the U.S. exporter. (The regulations also apply, of course, to German food processors.)

The old law was a "prohibitive list"—anything not specifically prohibited was allowed, and the burden of proving the additives harmful rested with the German government.

Only four regulations went into effect on Dec. 23 (those dealing with preservatives, dyes, foreign substances in general, and chemical treatment of fruit). Other sections of the new law are expected to be implemented dur-

ing this year, with extensions to be granted, if necessary.

What Goes: Here are some of the trouble spots that U.S. firms will encounter: under the preservatives category, sequestering agents, anticaking agents and phenolic antioxidants are not permitted. Some emulsifiers have been given approval, but there is still indefinite policy about artificial sweetening agents.

The Germans have approved the use of most U.S.-accepted food dyes, but not all. The color ordinance prohibits any coloring of fresh fruit. Only some canned fruit and jams (cherries, plums and strawberries) may still be colored, and color must be indicated on the label.

A grace period was granted to dried fruits. After July 1, '60, dried apples, apricots, pears and peaches may be treated only with 1 gram/kg. sulfur dioxide. Coloring must be shown on the label.

The new regulations on citrus fruits are generally in line with U.S. regulations. The Germans will accept biphenyl, a decay inhibitor (70 parts/million), and orthophenyl phenol (10 parts/million). This limit will be somewhat restrictive for U.S. citrus growers but still easily met.

Also permitted will be use of some organic-derived waxes for coatings—beeswax, carnauba, sperm wax—provided they are free of arsenic. However, a hassle is still going on over use of petroleum-derived waxes.

The only additives the Germans are

allowing as preservatives for canned food are sorbic acid, benzoic acid, benzoic acid ester and formic acid. These may be used only for 26 food categories, including fish and egg products, vegetable and fish salads, prepared fruit and sweets.

Sales Significance: Now, in dealings with Germany—and the many other countries that are already following Germany's lead on food additives laws—U.S. suppliers and exporters can no longer assume that because products meet U.S. standards they will meet those of other nations.

It also seems likely that U.S. exporters will have to use more technical people in selling to European customers.

Since European countries will not accept an additive simply because U.S. law permits it, they will want technical information on which they can make their own decisions.

In Germany, additives are subject to approval by the ministries of the interior, agriculture, and economics, in addition to the ministry of atomic energy in the case of ultraviolet or ionizing rays used in food treatment.

German Economy Is Key: The Germans are deliberately keeping their number of additives to a minimum. So far, only 16 chemicals have been approved under the German law, compared with 182 permitted in the U.S. The list is severely restricted largely because the German food industries are not as technologically advanced as are the U.S. counterparts. When

* The term "Lebensmittel" (food), within the meaning of the new law, applies to all substances intended to be eaten, chewed or drunk by human beings in their original, prepared or processed state, unless they are primarily intended to be used as a cure, relief or preventive of disease. Equally treated as "food" are: tobacco, products containing tobacco or resembling tobacco, which are intended to be smoked, chewed or snuffed.

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These positions are available because, in our expansion, we have been and are now promoting the people formerly holding them. Interviews may be arranged in your local area or Chicago. Please write full details in confidence to:

John W. Church, Personnel Manager
Armour Industrial Chemical Co.
110 N. Wacker Drive
Chicago 6, Illinois

SODIUM SULPHATE

(Anhydrous)

SALT CAKE



PRIOR
CHEMICAL CORPORATION
420 LEXINGTON AVENUE
NEW YORK 17, N. Y.

SPECIALTIES

one additive will do a job, the Germans are against approving numerous comparable compounds.

Lloyd Hazleton, president of Hazleton Laboratories (Falls Church, Va.) and technical director of the Industry Committee on Citrus Additives, spent three weeks in West Germany recently consulting with agricultural officials and scientific advisory committees about the new law. He says that some of Germany's restrictions result from that country's unfamiliarity with processed foods.

"Supermarkets are just starting there," he told **CHEMICAL WEEK**. "And home freezers and convenience foods have developed markets only recently."

He believes Germany's "anti-additive attitude will last only a few years. When their standard of living rises—with TV dinners and other luxury foods—they will gradually come to use and accept more additives."

The Germans also are less inclined to throw away second-class merchandise. For example, apples with worms can be sold there, whereas they would go unbought in the U.S. Consequently, there is not the same incentive to accept heavy applications of pesticides.

Situation Hopeful: Another encouraging point stressed by Hazleton is the extreme cooperation of German businessmen, scientists and the government staff with the U.S. in developing a workable law. "One by one, the extremists are either modifying their views or being outweighed by the predominance of qualified, capable scientists," he adds.

Aside from resistance from groups like Germany's farm bloc—called the Green Front—U.S. exporters can look forward to cooperation from German importers and wholesalers in the immediate future and an increasingly liberal additives law as the German standard of living nears our own.

Tune-Up for Tone

This week, Tone, a new aerosol furniture polish made by Simoniz Co. (Chicago), made its nationwide debut and it shows promise of giving Johnson's Pledge a run for its money.

Test marketing of Tone began last September in Columbus, O., and Peoria. Although Simoniz originally had planned national distribution in

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SOLVAY TECHNICAL AND ENGINEERING SERVICE
First Edition - 1st Printing 1959
Bulletin No. 15

CAUSTIC POTASH

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NEW SOLVAY TECHNICAL BULLETIN
For all Caustic Potash users!

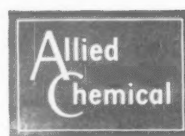
Contains properties of caustic potash and its solutions . . . data on unloading, handling, dissolving . . . conversion tables . . . wall chart of handling precautions.

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DP-10

Please send me without cost your new Bulletin 15, Caustic Potash,
as well as the other Solvay bulletins checked below.

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| <input type="checkbox"/> #4—Calcium Chloride in Refrigeration | <input type="checkbox"/> #9—The Analysis of Alkalies |
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| <input type="checkbox"/> #8—Alkalies and Chlorine in the Treatment of Municipal and Industrial Water | <input type="checkbox"/> #16—Calcium Chloride |

Name _____

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CHEMICAL WEEK • ADVERTISERS' INDEX

January 9, 1960

ADSCO DIV. OF YUBA CONSOLIDATED INDUSTRIES, INC. 30 Agency—N. Gorman & Co., Inc.	HAWS DRINKING FAUCET CO. 58 Agency—Pacific Advertising Staff	UNITED CARBON CO. 20-21 Agency—Arthur J. Falconer Adv.
*ALLIED CHEMICAL CORP. BAKER & ADAMSON DIV. 3rd cover Agency—Kantor, Hilton, Chesley, Clifford & Atherton, Inc.	HARSHAW CHEMICAL CO. 11	VIRGINIA ELECTRIC & POWER CO. 64 Agency—Cargill & Wilson, Inc.
*ALLIED CHEMICAL CORP. SEMET-SOLVAY PETROCHEMICAL DIV. 52 Agency—Benton & Bowles, Inc.	HERCULES POWDER CO. 86 Agency—Fuller & Smith & Ross, Inc.	WEST VIRGINIA PULP & PAPER CO. MULTIWALL BAG DIV. 10 Agency—Fuller & Smith & Ross, Inc.
*ALLIED CHEMICAL CORP. SOLVAY PROCESS DIV. 89 Agency—Kantor, Hilton, Chesley, Clifford & Atherton, Inc.	IMPERIAL COLOR CHEM. & PAPER CORP. 74 Agency—James R. Flanagan Adv. Agency	*WITCO CHEMICAL CO. 41 Agency—Hazard Advertising Co.
AMERICAN CAN CO. 19 Agency—Compton Adv., Inc.	*JEFFERSON CHEMICAL CO. 16 Agency—Robison-Gerard-McGary, Inc.	*WYANDOTTE CHEMICALS CO. 4-5 Agency—Brooke, Smith, French & Durrance, Inc.
AMERICAN MINERAL SPIRITS CO. 45 Agency—Leo Burnett Co., Inc.	LUMMUS CO. 8 Agency—G. M. Basford Co.	
ANSUL CHEMICAL CO. 68 Agency—The Brady Co.	MALLINCKRODT CHEMICAL WORKS 34 Agency—H. George Bloch, Inc.	tracers SECTION (Classified Advertising) F. J. Eberle, Business Mgr.
BARNSTEAD STILL & STERILIZER CO. 6 Agency—Copley Adv. Agency, Inc.	McGraw-Hill Book Co. 40	CHEMICALS WANTED 91
BLAW-KNOX CO. CHEMICAL PLANTS DIV. 67 Agency—Ketchum, MacLeod & Grove, Inc.	MINNEAPOLIS-HONEYWELL REGULATOR CO. 46-47 Agency—The Aitkin-Kynett Co., Inc.	EMPLOYMENT 91
BLOCKSON CHEMICAL CO. 54 Agency—Wm. Balsam Adv.	NORTH AMERICAN CAR CORP. 1 Agency—Doremus & Co. Adv.	EQUIPMENT: Used/Surplus New For Sale 91
CATALYTIC CONSTRUCTION CO. 71 Agency—Doremus-Eshleman Co.	ORONITE CHEMICAL CO. 85 Agency—L. C. Cole Co.	PROFESSIONAL SERVICES 91
*CELANESE CORP. OF AMERICA 37 Agency—Ellington & Co., Inc.	OWENS ILLINOIS GLASS CO. 60 Agency—J. Walter Thompson Co.	SELLING OPPORTUNITIES Offered/Wanted 91
*CHASE BAG CO. 29 Agency—Hazard Advertising Co.	PENNSYLVANIA INDUSTRIAL CHEMICAL CORP. 51 Agency—Downing Industrial Adv., Inc.	WANTED 91
CHEMICAL MFG. CO. 53 Agency—Geyer, Morey & Ballard, Inc.	PITTSBURGH COKE & CHEM. CO. 9 Agency—Erwin Wasey, Ruthrauff & Ryan Walker Div.	
*CONTINENTAL OIL CO. 59 Agency—Benton & Bowles, Inc.	REICHHOLD CHEMICALS, INC. 72-73 Agency—MacManus, John & Adams, Inc.	
CORCO CHEMICAL CO. 42 Agency—Ray Ellis Advertising, Inc.	SHARPLES CORP. THE 48 Agency—Reuner, Inc.	
DAY CO. THE J. H. 57 Agency—The Keeler & Stiles Co.	SHELL CHEMICAL CORP. 33 Agency—J. Walter Thompson Co.	
DURIRON CO. THE 4th cover Agency—Kircher, Holton & Collett, Inc.	SINCLAIR PETROCHEMICALS, INC. 22 Agency—Geyer, Morey Madden & Ballard	
*EASTMAN CHEMICAL PRODUCTS CO. 38 Agency—Fred Wittner Co.	STANDARD STEEL WORKS, INC. 53 Agency—James R. Reese Adv. Co.	
EMERY INDUSTRIES, INC. 63 Agency—Farson, Huff & Northlieh, Inc.	STEARNS-ROGER MFG. CO. 27 Agency—Mosher, Reiser, Williamson Adv. Agency, Inc.	
ETHYL CORP. 2 Agency—Reach, McClinton & Co., Inc.	SWIFT & CO. 70 Agency—Russell T. Gray, Inc.	
GAYLORD CONTAINER CORP. DIV. OF CROWN ZELLERBACH CORP. 14 Agency—French Advertising Inc.	*TENNESSEE CORP. 50 Agency—Crawford & Porter, Inc.	
GEICY INDUSTRIAL CHEM. 44 Agency—Beekman & Packard, Inc.	TEXAS GULF SULPHUR CO. 13 Agency—Sanger Funnell, Inc.	
GENERAL ANILINE & FILM CORP. 77 Agency—L. W. Frohlich & Co.	*TRUBEK LABORATORIES 2nd Cover Agency—Ray Ellis Adv.	
GENERAL AMERICAN TRANSPORTATION CORP. 12 Agency—Edward H. Weiss & Co.	U. S. TESTING CO. 56 Agency—W. L. Towne Co., Inc.	
HALL CO. THE C. P. 58 Agency—Cruttenden Adv.	UNION CARBIDE CHEMICALS CO. DIV. OF UNION CARBIDE CORP. 7 Agency—J. M. Mathes, Inc.	

*For complete product data see catalog unit in the BUYERS' GUIDE ISSUE for 1959-60

SPECIALTIES

the fall of '60, favorable sales results pushed up the kickoff date to early January.

Tone is packaged in a 6½-oz. can, retails for 89¢, and is thought to be a wax-base aerosol heavier than current "mists" such as Pledge.

The test program in Peoria was reportedly so successful that Tone pushed Pledge into second place in two months. Some of the spectacular initial sales, however, may be credited to a purchase price refund deal.

PRODUCTS

Coloring Agent: Nopco Chemical Co. (60 Park Place, Newark, N.J.) is introducing a natural food coloring concentrate for pharmaceuticals, cosmetics and foodstuffs. The 20% concentrate additive is said to give uniform color that is free of red and green tints, and to be rich in provitamin A carotenoids. Nopco points out that products colored with natural carotenes can include a guaranteed vitamin A potency in labeling and advertising. Nopco also has available blends of the natural carotenes with added vitamins A, D₂ or D₃.

Folksy Approach: B. T. Babbitt (New York) has begun marketing of a health food product. Called Honegar, it's a combination of natural unpasteurized honey and apple cider vinegar. The product, according to Babbitt, was inspired by the recent book, "Folk Medicine," by Dr. D. C. Jarvis, a Vermont physician.

Simplifies Teflon Bonding: A simplified method of bonding Teflon to itself and to other materials has been developed by W. L. Associates (487 Paper Mill Rd., Newark, Del.). The system, called Tetra-Etch, employs an active form of sodium in solution to form a carbonaceous film, which anchors adhesives to the Teflon. The 2-oz. bottle (which treats between 1 and 3 sq.ft. of surface) sells for \$4.

Liquid Soap: Dee's Products and Engineering (4115 El Camino Way, Palo Alto, Calif.) has introduced Bubbles, a liquid hand soap containing Actamer, Monsanto's bithionol-type bacteriostat. Reportedly milder and less costly than conventional soaps, Bubbles is suggested for industrial and institutional uses.

Tracers

TO THE
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Unusual Opportunity for Chemist. Established AAAAA Company wants man with formulating knowledge and experience in industrial and plating cleaners. Will consider chemist currently employed as assistant or helper who seeks responsible position and financial advancement. Experienced man only. Send detailed resume. All replies strictly confidential. Our employees know of this ad. P-3249, Chemical Week.

Regional Chemical Sales Manager for Midwest to be located in Dallas. Chemical Degree and experience essential. Opportunity for advancement. Please send resume to Personnel Director; Deloitte-Taylor Oil Corporation; 823 Corrigan Towers; Dallas, Texas.

Corrosion Research—Immediate opening in corrosion research laboratory of large metal company. To plan and conduct basic and applied research on corrosion of ferrous and non-ferrous alloys. Prefer graduate degree, with several years experience in corrosion research. Position offers opportunity for advancement and publication of research. Send complete resume stating salary requirement. P-3361, Chemical Week.

Commercial Development—We are seeking a technically trained individual who has, preferably, development and laboratory experience. Candidate should have 5-7 years minimum experience in chemical sales and/or development, preferably with work in the fatty derivative field. Assignment will be in Mpls. Doing market studies and field surveys. Send resume in confidence to: Employment Manager, Archer-Daniels-Midland Co., P.O. Box 532, Mpls. 40, Minn.

Chief Cosmetic Chemist: To Head Up Labora- tories for strong, aggressive multi-million dollar company, whose products are sales leaders in the mass toiletry, proprietary and hair coloring fields. This is a wonderful opportunity for a sound experienced man, who is capable of working with top executives in our organization. If you enjoy a great sense of achievement in seeing products developed under your supervision become national leaders, and also want to enjoy the comforts of excellent compensation, working conditions and growth, this is the position for you. We are located in a large midwestern city. Our employees know of this ad. Send complete details to P-3377, Chemical Week.

Chief Manufacturing Chemist: Small firm re- quires a Chemical Supervisor with experience in organic chemistry—including microscopic examinations. Preferably in cosmetics, soaps, solvents and greases. P-3405, Chemical Week.

POSITION WANTED

Senior Chemical Engineer—Manager 16 yrs man- agement and technical background of plant operations, R & D and process engineering. Widely varied organic and inorganic experience. Active AEC and military "secret" clearances. "Can handle any responsible position in a C.P.I." PW-3366, Chemical Week.

Tablet Coater seeks contact developer soft center tablet 40 years exp. PW-3381, Chemical Week.

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Barium Hydrox. N. F. (J. T. Baker Orig.) 15 Leverpaks \$.06/lb. Triethylene Glycol Dicaprylate 10 drums \$.18/lb. Toluol 10,000 gals. \$.20/gal. Type "S" Anti-Freeze \$.39/gal. (in drums). 30,000 lbs. Dibutyl Sebacate. Bulk \$.35/lb. 2 orig. drs. Polyethylene Gly. 1000, Monostearate \$.20/lb. 3 orig. drs. Barrett Pyridine 15A \$.35/lb. O/S 2000 gals mixed Phthalate-Phosphate Plasticizer 20¢ lb. O/S 500 TCP Plasticizer 20¢ lb. 3 drs-Isoprene-Enjay virgin 15¢. 2000 lbs. Powdered Paraformaldehyde 9¢ lb. FS-3353, Chemical Week.

Vulcan 110" dia. x 16" high T316 SS bubble cap column, 10 tray on 12" centers. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

1960 sq. ft. T316 SS horiz. heat exchangers, (468)—1" tubes. ASME 75# WP tubes, 50# WP shell. Perry, 1416 N. Sixth St., Phila. 22, Pa.

CHEMICALS WANTED

Surplus Wanted—Chemicals, Pharmaceuticals Oils, Acids Plasticizers, Resins, Dyes, Solvents, Pigments Etc. Chemical Service Corporation, 96-02 Beaver Street, New York 5, N. Y. HANOVER 2-6970.

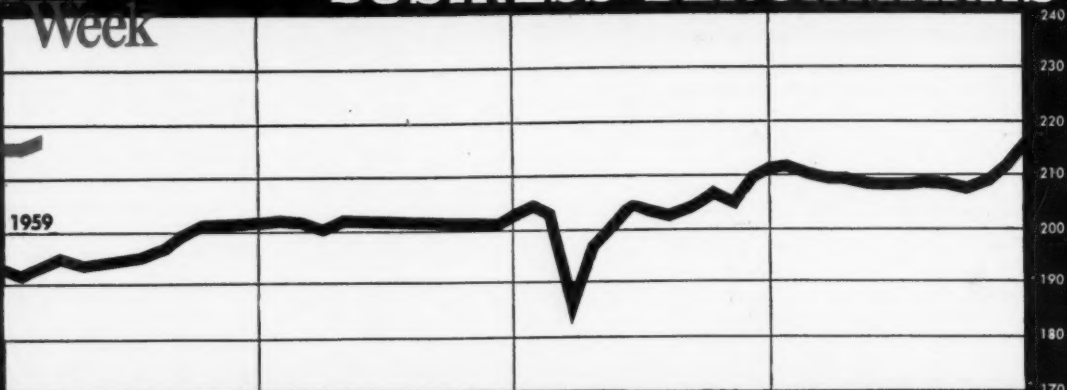
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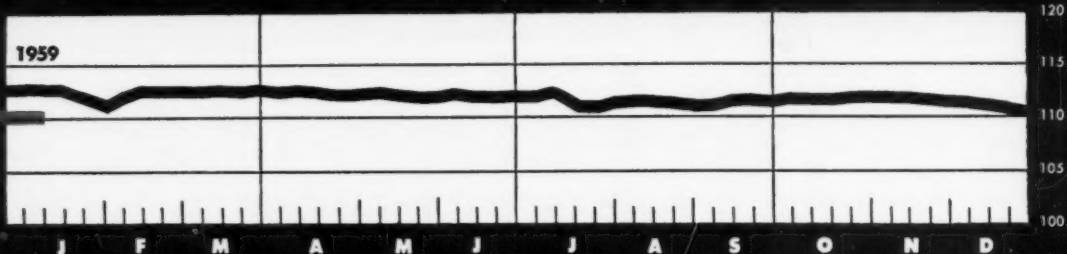
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business; personal or personnel; financial; equipment; etc., may be offered or located through the classified advertising section of CHEMICAL WEEK. For more information, write to: CLASSIFIED ADVERTISING DIVISION P.O. Box 12 New York 36, New York.

60 OUTPUT INDEX



60 PRICE INDEX



JANUARY 9, 1960

WEEKLY BUSINESS INDICATORS

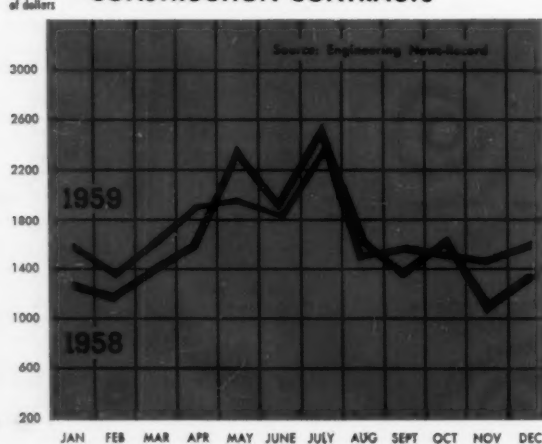
	<i>Latest Week</i>	<i>Preceding Week</i>	<i>Year Ago</i>
Chemical Week output index (1947-1949=100)	216.5	215.0	191.0
Chemical Week wholesale price index (1947=100)	110.9	110.8	111.9
Steel ingot output (thousand tons)	2,687	2,641	2,058
Electric power (million kilowatt-hours)	13,400	14,150	12,379
Crude oil and condensate (daily av., thousand bbls.)	7,109	7,139	7,129

FOREIGN TRADE INDICATORS (million dollars)

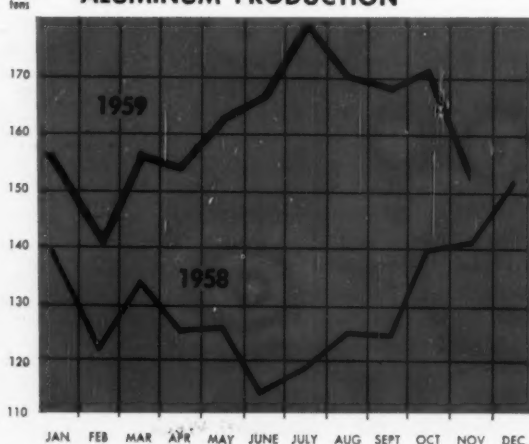
	<i>Latest Month</i>	<i>Preceding Month</i>	<i>Year Ago</i>	<i>Latest Month</i>	<i>Preceding Month</i>	<i>Year Ago</i>
Chemicals, total	\$119.3	\$139.6	\$119.9	\$28.0	\$33.0	\$27.6
Coal-tar products	7.4	9.4	11.7	6.7	6.0	5.7
Industrial chemicals	20.9	26.2	21.0	10.6	9.5	8.2
Medicinals and pharmaceuticals	25.0	26.2	24.2	1.8	1.5	1.3
Fertilizers and materials	7.8	8.0	9.0	6.0	8.2	9.6
Vegetable oils and fat (inedible)	5.3	11.8	6.2	6.7	6.5	6.6

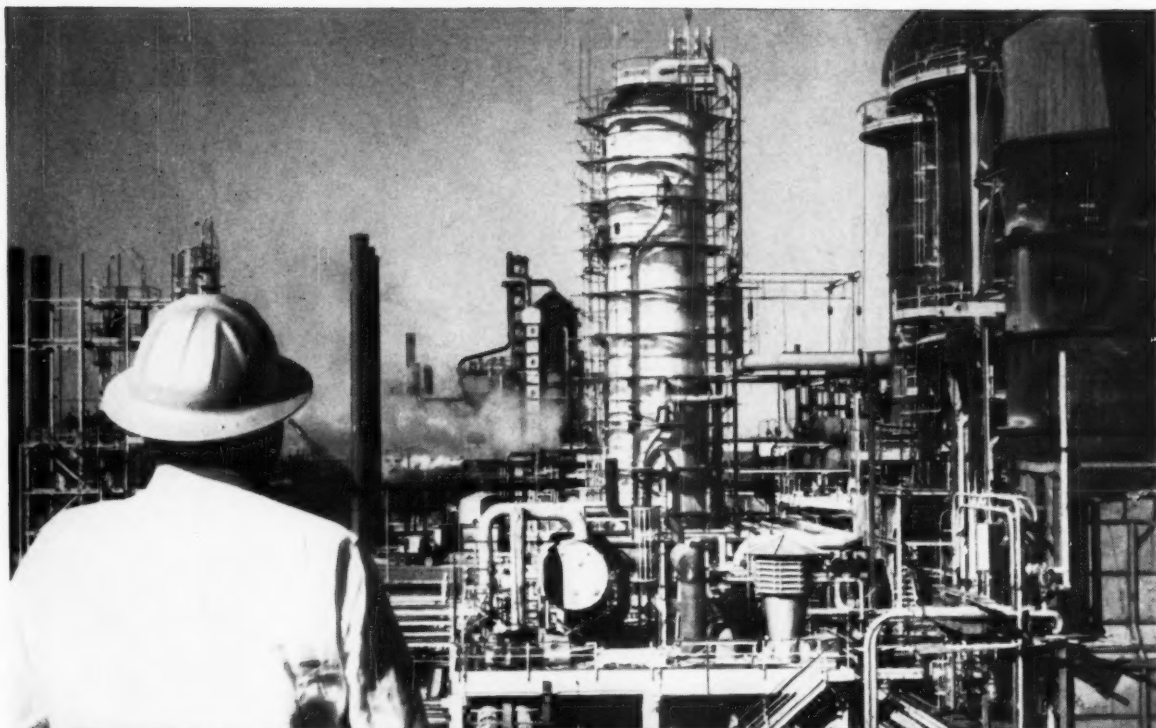
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PROBLEM: An effective solid catalyst was sought for the alkylation of isobutane with ethylene to produce diisopropyl, a high octane gasoline component valuable for its high lead susceptibility and excellent volatility.

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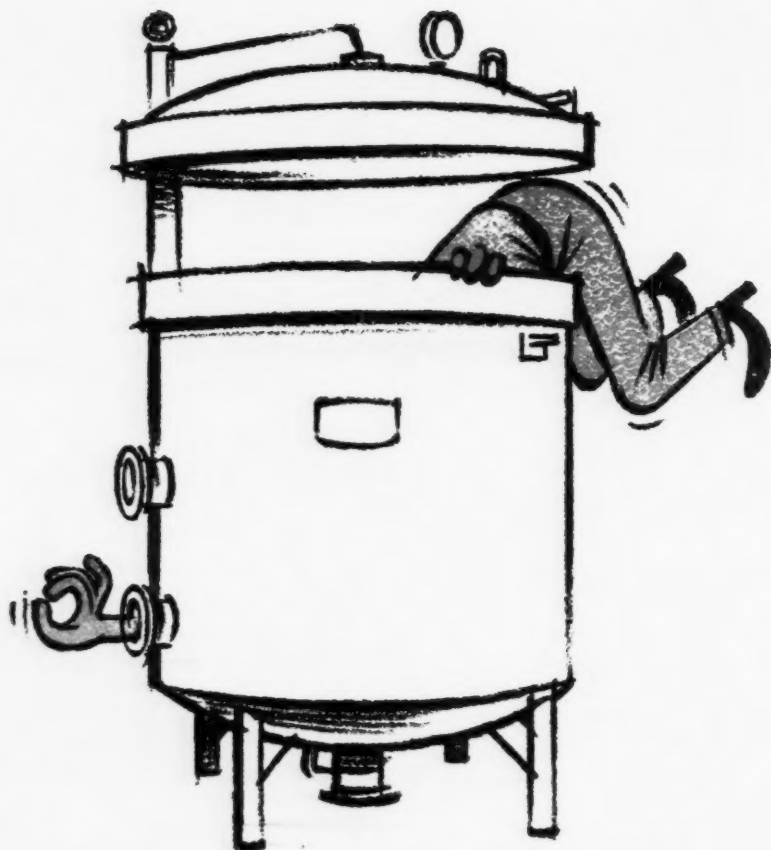
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 Boron Trifluoride, Ether Complex, Tech.
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